

COMPARATIVE STUDY OF THE PERSISTENCE AND ACADEMIC SUCCESS OF
FLORIDA COMMUNITY COLLEGE STUDENT-ATHLETES AND NON-ATHLETE
STUDENTS: 2004 TO 2007

By

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To my family, and our future generations

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Abstract of Dissertation Presented to the Graduate School
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This study explored degree attainment and four-year transfer rates for Florida community college students that were financially supported through athletically-related financial aid and those in the general student population. Longitudinal data from the Florida Department of Education's PK-20 Data Warehouse and institutional data from the Integrated Postsecondary Education Data System (IPEDS) were used to examine the effects of athletically-related financial aid, individual characteristics, and institutional factors on student's academic success at the community college.

For the purposes of this study, a student was deemed "academically successful" if he or she received a degree, transferred to a four-year institution, or earned a degree and transferred to a four-year institution within a maximum of 11 semesters or three and one-half years. A longitudinal multivariate methodology was employed to analyze institutional level and student level data, with special emphasis and focus on transfer and degree completion rates for student-athletes. Using logistic regression methods, results indicated that student-athletes at the community college were less likely than non-athlete students to earn a degree from the community college within three years of initial enrollment. No significant differences were

found between non-athlete students and student-athletes when considering the probability of transfer to a four-year institution in the state of Florida or degree attainment and four-year transfer.

CHAPTER 1 INTRODUCTION

It's no longer enough for community colleges to get students in the door. Now they must get more of them out the door with a degree or a ticket to a four-year university.

--Elyse Ashburn (2007)

More than 70,000 students participate in intercollegiate athletics at public community colleges in the United States each year (National Junior College Athletic Association, 2008). Yet, there presently exists little empirical research that examines the persistence, degree completion or transfer rates of student-athletes at public community colleges. The oversight of this student population in the literature is troubling given the mounting calls for increased institutional accountability and documentation of student outcomes within higher education (Ashburn, 2007; Dougherty & Kienzl, 2006). To this end, the present research inquiry is a forward step toward enhancing our understanding and knowledge of the academic performance and outcomes of student-athletes at the community college.

This study examines the influence of individual and institutional characteristics on the academic success of students that were awarded athletically-related financial aid, while enrolled at the community college. This present examination begins with a discussion of the individual and societal benefits of higher education participation, then discuss the role community colleges and athletic programs play in providing increased student access to higher education.

Benefits of Higher Education Participation

Higher education literature provides several examples of the educational, developmental, economic, and societal benefits of higher education participation (King & Baxter Magolda, 1996; National Association of Student Personnel Administrators (NASPA) & American College Personnel Association, (ACPA), 2004). This body of literature suggests that individuals who attend college are more inclined to be actively involved in civic and community-based outreach

programs, have higher career aspirations, an increased cognitive understanding, a sense of personal maturity, and interpersonal effectiveness, as compared to those that do not attend college (King & Baxter Magolda, 1996; Kuh, 1995; Pascarella, & Terenzini, 1991; 2005). In addition to the above stated cognitive and civic benefits of higher education, the literature provides that there are several individual long-term financial benefits associated with college attendance, such as higher annual salaries and increased probability of being full-time employed.

Individuals with increased levels of education beyond high school, and those in jobs that require specialized training, are more likely to earn higher annual salaries and be full-time employed, compared to individuals that do not have college experience (Baum, & Ma, 2007; Marcotte, Bailey, Borkoski, & Kienzl, 2005). Accordingly, higher education is viewed as one of the most critical avenues to reducing persistent societal income inequalities (Dickert-Colin and Rubinstein, 2007; Goldhaber & Peri, 2007). Though the importance of individual development, increased citizenship, and financial security cannot be under stressed, one of the most important benefits of higher education is the influence it has on society as a whole.

Society benefits from the advanced educational attainment of its citizens through increased tax revenues, lower crime rates, and decreased reliance of individuals and families on government support systems and programs (Boswell, 2004; Sorey & Duggan, 2008).

Furthermore, scholars suggest that a highly educated citizenship is essential to the global competitiveness of the United States in fields such as science, engineering, and medicine - all of which ultimately benefit the continued economic stability of our country (Sorey & Duggan, 2008; Spellings Report, 2006).

As the previous examples provide a glimpse of the associated benefits afforded to individuals who participate in higher education, it must be dually noted that access to higher

education and these benefits are only available to a select few. A numbers of individuals in the U.S. are excluded from participating in higher education due to such constraints as high tuition costs, institutional location, and scholastic ability (Gleezer, 1998). For individuals constrained by these and other barriers, the community college provides an alternative avenue to access higher education and other advanced training opportunities, which provide workers the necessary skills to be successful in an increasingly competitive job market.

Impact and Influence of the Community College

Community colleges are a major provider of the postsecondary education and job-related training received by students enrolled in institutions of higher education (Brewer & Gray, 1999). Since 2000, student enrollment at public community colleges has steadily increased each year. During the 2006 - 2007 academic year more than 6.2 million students (35% of all postsecondary students) attended a public community college (Provasnik & Planty, 2008). The enrollment trends witnessed at community colleges over the past seven years further illustrate the ever-increasing role these institutions play in opening post-secondary education to students of all academic backgrounds and proficiency levels. Enrollment increases, in a large part, can also be contributed to the appeal of community colleges to minority and non-traditional students as a viable alternative to beginning their academic studies at a four-year institution (Bragg, 2001; Provasnik, & Planty, 2008; Wellman, 2002).

Researchers suggest, that community colleges are most appealing to diverse student populations (e.g., Students of color, low income, women, adult learners) because of their open admission policies, low tuition rates, flexible course scheduling and offerings, and their close proximity to an individual's home or place of employment (Culp, 2005; Jacobson, 2005). For many years, community colleges have been viewed as "inclusive institutions" ("About Community Colleges", n.d.) that provide a quality learning experience for all students, regardless

of previous academic experience. Wattenbarger (1953) often used the term “democratic education” to describe community colleges because of their continued commitment to preserving principles of open access and educational opportunities for all students. Again, all of the above examples demonstrate the ways in which community colleges extend opportunities for diverse groups of men and women to participate in higher education. For these reasons, increased numbers of individuals are drawn to community colleges for their academic and workforce training needs.

Moreover, in addition to these pronounced characteristics of the community college, increased student participation in higher education is extended to prospective students through community colleges’ sponsorship of intercollegiate athletic programs. Since the 1930s, community colleges have provided thousands of students the opportunity to continue their academic studies and athletic participation beyond their high school years (Reapple, Peery, & Hohman, 1982).

Role of Athletics in Providing Access to Higher Education

Through recruitment, institutions solicit student prospects for the purpose of enrollment and athletic participation (U.S. Department of Education, 1996). In the state Florida during the 2004-2005 academic year, more than 1,500 students participated in athletics at community colleges (Office of Postsecondary Education, 2007), and more than 70,000 students participated in athletics at community colleges nationwide (NJCAA, 2008). Based on these participation numbers it can be inferred that community colleges and athletics programs provide student-athletes with another viable avenue to access higher education

There are a number of reasons why students select to participate in athletics at the community college (Letawsky, Schneider, Pedersen, & Palmer, 2003). For some students, athletics is seen as a viable way to gain access to higher education (Boulard, 2008; Peltier,

Laden, & Matranga, 1999; London, 1992); for other prospective students, athletics is seen as a way to enhance their collegiate experience (Castaneda, Katsinas & Hardy, 2006; William, 1990). Furthermore, scholars suggest that athletics, for Students of color and those from minimal to modest financial means, is a path toward upward social mobility through degree attainment, transfer to a four-year institution, or a path to a professional athletic career (Gaston-Gayles, 2004; Hawkins, 1999; Weatherspoon, 2007).

Regardless of students' academic or professional motivation for attending college, institutions and athletics programs have maintained a long history of providing opportunities for students to experience higher education. Through these experiences, students have been able to earn degrees and/or continue their academic studies at a four-year institution. While the current literature provides several illustrations and examples of the experiences of students that begin their academic studies at the community college, little is known about the academic experiences and subsequent outcomes of individuals that utilize athletics at the community college to gain entry to higher education.

Purpose of Study

The purpose of this study was to examine the persistence and academic success rates of students that received athletically-related financial aid while enrolled at the community college. For the purposes of this study, a student was deemed "academically successful" if he or she met one of the following three criteria within a maximum of 11 semesters (or three and one-half years): (a) completion of academic requirements leading to a certificate or associates degree; (b) transfer to a four-year institution; or (c) received a certificate or associates degree and transferred to a four-year institution. A maximum of 11 semesters was set as the parameter for this study due to limitations in the availability of data regarding the disbarment of athletically-related to students in the state of Florida prior to the 2003-2004 academic year. Further attention and

explanation regarding the utilized time parameter and the institutional and student samples will be provided in later chapters.

In this study, particular focus is given to the analysis of data for students who were awarded athletically-related financial aid during their initial enrollment year. The U.S. Department of Education (1996) has deemed the award of athletically-related financial aid as, “any scholarship, grant, or other form of financial assistance, offered by an institution, and the terms of which require the recipient to participate in a program of intercollegiate athletics at the institution” (n.p.). Though the award of athletically-related financial aid serves as an indicator to distinguish student-athletes from the general student population, it must be noted that this analysis does not encompass all student-athletes from the 2004-2005 student cohort. Due to the indicators used to select students for this study, it is possible that some students that participated in athletics during their tenure at the community college were excluded because they were not awarded athletically-related financial aid. As a result, the terms “student-athlete” and “athlete” used in this study refer only to those students who received athletically-related financial aid while attending a community college in the state of Florida.

Research Questions

By addressing issues that have been neglected in previous literature, this study aims to expand the knowledge base of information regarding student-athletes at the community college. Accordingly, the following research questions guide the focus of this empirical study:

1. To what extent do academic performance (i.e., GPA, credit hours enrolled, credit hours earned), degree attainment, and four-year transfer rates differ between full-time first-time (FTFT) enrolled student-athletes, compared to their peers at the community college?

2. What effect do individual, pre-college and institutional characteristics have on the academic performance, degree attainment, and four-year transfer rates for student-athletes, compared to their non-athlete peers?

Statement of Problem

Community college students and student-athletes have been highlighted in much of the recent literature due to their proclivity to perform lower academically than their institutional peers. As a result, the impetus for this study stems from two primary issues that have received wide attention from scholars and institutional leaders in recent years: 1) low degree completion and four-year transfer rates for students who begin their academic studies at the community college; and 2) high attrition and low graduation rates of student-athletes at four-year NCAA affiliated institutions. This study intends to examine academic performance, degree attainment, and four-year transfer rates within the provided sample of community college student-athletes.

When examining academic outcomes for community college students, it is quickly obvious that a large number of students have intentions of completing a degree and/or transferring to a four-year institution, but only a small percentage of these students actually complete these intended goals (Boswell, 2004). Recent estimates suggest only 20% of community college students who intend to transfer to a four-year institution will do so within three years (Doyle, 2006; Laanan, 1996). Bailey, Calcagno, Jenkins, Keens, and Leinbach (2005), using Student Right-to-Know and Campus Security Act [SRK] data for the 2002- 2003 academic year, found that only 16% of full-time first-time (FTFT) enrolled community college students had transferred to a four-year institution after three years, and only 22% earned a postsecondary degree or certificate within the same time period, despite their initial intentions.

The result of increased enrollment (Provasnik & Planty, 2008) and decreased student success rates (i.e., degree completion, transfer) at community colleges has attracted the attention

of scholars, administrators, and higher education constituents. Dougherty and Townsend (2006) suggested “With increased attention has come greater demand for community colleges to document their claims of success and allay continuing concerns over low transfer and degree attainment rates” (p. 6). Although this increased attention has also prompted a greater emphasis and focus on documenting degree attainment and four-year transfer rates for community college students within higher education (Dougherty and Townsend, 2006; Laanan, Hardy, and Katsinas, 2006), these concerns have only recently begun to focus on the success rates of student-athletes.

Several institutional and national athletic governing board policies have been instituted to document the academic performance of student-athletes at four-year colleges and universities, but similar policies have not been proposed for documenting the academic performance of student-athletes at institutions classified as less than four-year. The impetus for increased monitoring of student-athletes’ performance at four-year institutions was due to the negative reputation held by colleges and universities for moving students from college freshmen to college graduate. For many years, across all sports and institutional types, student-athletes at four-year institutions have lagged behind their peers in degree completion and time to degree completion (Ferris, Finster, & McDonald, 2004).

Since the 1980s, the academic performance record of student-athletes has led to increased monitoring of students’ behaviors at National Collegiate Athletic Association (NCAA) Division I (Division I) & Division II (Division II) member institutions. More specifically, greater focus has been placed on monitoring the academic performance of student-athletes who participate in high profile sports, often referred to as revenue generating sports (McArdle & Hamagami, 1994; Purdy, Eitzen, & Hufnagel, 1982). The cries of public citizens and educators for academic and athletic reform have resulted in increased dialogue regarding the low degree completion and

academic success rates of four-year student-athletes (Watt & Moore, 2001). Again, these calls have been slow to illuminate the academic outcomes of community college student-athletes, or provide substantial programs or policies to mitigate any potential barriers.

A primary reason for this lack of concern regarding community college student-athletes may be a product of minimal attention given to issues regarding student-athletes by the academic community. Empirical studies on community colleges have examined the impact of a number of individual and institutional factors such as race, gender, social-economic status (SES), college preparedness, and institutional size on student outcomes, but few scholars and researchers have extensively considered the impact of athletic participation in their analysis.

Significance of Study

The persistence and academic success of student-athletes at the community college is a topic that has been neglected in the current literature on student persistence and degree attainment. Few institutional, statewide, or national studies are readily available regarding athletics and athletes at community colleges, or their impact on institutional and system-wide retention (Peterman & Matz, 2000). Much of the athletically-related literature which is available is focused on topics exclusive to four-year institutions (Knapp & Raney, 1988). The tapered focus of the literature on athletics and student-athletes at four-year institutions has created a significant gap in the literature. One can assume that the community college student-athlete population is “included” in the literature on four-year student-athletes by default because all community college student-athletes eventually become four-year students and athletes. One can also assume that no inherent differences exist between student-athletes at these different institutions. To date, these assumptions have yet to be proven conclusively in the literature.

A continued focus of the factors which lead to increased student retention in general--and under-served students groups more specifically--is critical to the future success of the American

higher education system. This study and its findings intend to assist community colleges in their quest to mitigate barriers that have plagued student's academic success and persistence in recent years. This study also intends to provide community colleges and state policymakers with a progress report of the academic successes and shortcomings of students who are financially supported through their participation in institutionally sponsored athletic programs.

Historical Perspective

Until recently, there has existed a great chasm between four-year student-athletes and non-athlete students in degree completion rates and time to degree attainment (Sports Illustrated, 2008). In years prior to the present decade, stories abound of the low graduation rates of athletes participating in large, high profile athletic programs (DeBrock, Hendricks, & Koenker, 1996; Purdy, Eitzen, & Hufnagel, 1982). The public's request for reform has since resulted in increased dialogue and policies toward improving the degree completion and academic success rates of student-athletes. In turn, increased dialogue and policies have lead to improved accountability standards regarding four-year institutions and their responsibility to graduate their student-athletes (Watt & Moore, 2001).

Since 1965, new initiatives have been aimed at holding institutions accountable for the academic success of their student-athletes (Heck & Takahashi, 2006). However, as stated previously, these reforms were not focused on increasing degree completion rates for student-athletes attending public community colleges in the U.S. For instance, Proposition 48 (1986), Proposition 16 (1996; 2003), and the Student Right-to-Know Act of 1990(SRK), were all intended to bring greater awareness and improve athletes' academic success by minimizing corrupt academic practices by institutions and athletic programs through requiring greater transparency (DeBrock, Hendricks, & Koenker, 1996; Heck & Takahashi, 2006; Waller, 2003).

In an effort to enhance graduation rates and raise the caliber of students attending NCAA Division I and Division II institutions on athletic scholarships, Proposition 48 increased minimum eligibility standards for recent high school graduates (Heck & Takahashi, 2006). Following the enactment of Proposition 48, high school graduates were required to have earned at least a 2.00 GPA in 11 core academic courses, and a 700 on the Scholastic Aptitude Test (SAT) or a 17 on the ACT (Waller, 2003). In 1996, Proposition 16 (1996; 2003) again raised the minimum requirements set forth in Proposition 48 (Aries, McCarthy, Salovey, & Banaji, 2004).

Approved in 1992, and effective for the 1996 freshmen student cohort, Proposition 16 increased GPA and core course completion GPA requirements to 2.0 in 13 approved high school academic core courses (e.g., English, math, natural or physical science), and required a 1010 SAT score and an 86 combined ACT score (Owings, McMillen, & Pinkerton, 1995). Additionally, Proposition 16 initiated a new sliding scale to determine athletic eligibility (see [Table A-1](#)). The new NCAA sliding scale required students who earned below the minimum required score on the SAT or ACT to have a high school GPA greater than 2.0 in their core courses to be eligible to participate in athletics at a Division I or Division II institution.

As Propositions 48 and 16 were aimed at enforcing minimum pre-entry eligibility standards for high school students to participate in NCAA Division I and Division II intercollegiate athletic programs, the SRK (1990) focused more specifically on students' performance once they were admitted to an institution. In accordance with SRK (1990) legislation, all postsecondary institutions (including community colleges) that receive federal funds are now required to publish student demographic information and 6 year graduation or completion rates (3 year rates for community colleges) for various categories of students (e.g.,

race, sex, gender, and student-athletes) annually (Bailey, Calcagno, Jenkins, Leinbach, & Kienzl, 2006).

Legislative measures to increase minimum pre-entry eligibility standards for recent high school students (Propositions 48 and 16) were not applicable to student-athletes entering the community college, as community colleges typically have minimum or no admission requirements. Provasnik and Planty (2008) noted that approximately 95 percent of public community colleges in the U.S. have open admissions policies, which allow all students the opportunity to enroll and participate in intercollegiate athletics at the community college, regardless of previous academic record or entrance exam scores. Though Propositions 48 and 16 were not intended to directly impact community college athletics or athletes, researchers suggest that these legislations did have an indirect impact on community colleges and community college student-athletes. To examine possible indirect effects on community colleges and students, Heck and Takahashi (2005) and Owings and associates (1995) examined the impact of Propositions 48 and 16 on college bound students' eligibility under the new legislations.

Heck and Takahashi (2005) examined the intended and unintended effects of Proposition 48 on 105 Division I football programs from 1983 to 1991. Their findings indicated an increase of approximately 7.5 percent in the number of community college athletes recruited to Division I institutions, and a 4.5 percent decrease in the number of high school graduates recruited in 1991, compared to 1985 (one year prior to the enactment of Proposition 48). Heck and Takahashi concluded that this decline in the number of recent high school graduates recruited by Division I and Division II institutions was attributed to a decreased pool of talented high school graduates who were also academically eligible to participate and compete at NCAA affiliated institutions.

Owings and associates (1995) conducted a study to investigate the indirect impact of Proposition 16 on recent high school graduates' potential to be eligible to participate in athletics at a four-year institution. Using high school transcripts and entrance exam scores for a sample of 1992 high school seniors, Owings and associates (1995) found that approximately 64 percent of 1995 high school graduates were academically eligible to participate in athletics under Proposition 16, compared to 82 percent of the same population that would have been eligible under Proposition 48 athletic eligibility standards. Moreover, only 46 percent of Black and 54 percent of Hispanic high school seniors met the requirements put forth in Proposition 16, compared to approximately 67 percent of white and Asian college-bound high school seniors. From their study, it was further concluded that students from low SES backgrounds were least likely to meet the Proposition 16 requirements (Owings, McMillen, Daniel, & Pinkerton, 1995).

The studies conducted by Heck and Takahashi (2005) and Owings and associates (1995) illustrate the dwindling opportunities that are available to under-performing high school students that desire to participate in athletics at four-year Division I and Division II institutions. Based on the findings from their reports, it stands to reason that community colleges will likely become the default institution for unprepared student-athletes, as minimum eligibility requirements steadily increase for student participation in Division I and Division II athletic programs (Hall, 2007; Prisbell, 2007; Wolverton, 2007). To further illustrate this point, the NCAA recently passed legislation to prohibit student enrollment in fraudulent college preparatory schools in order to meet minimum eligibility standards for athletic participation at NCAA affiliated institutions. Effective August 2007, according to the recently enacted NCAA rule, prospective four-year student-athletes are prohibited from attending college preparatory schools to improve academic deficiencies (i.e. GPA, entrance test scores) in order to become academically eligible to compete

at a Division I or Division II level institution (Prisbell, 2007). The new NCAA rule states that athletes have four years from their initial enrollment year in high school to meet the eligibility standards in the requisite core academic courses. Following four years of high school, a student may only take one additional core course at any high school recognized by the NCAA (Prisbell, 2007). In the coming years, unprepared student-athletes may have no other option than to enroll in a community college if they desire to one day attend and participate in athletics at a Division I or Division II institution (Gerdy, 1997; Hall, 2007; Sperber, 2000; Wolverton, 2007).

Contribution to the Study of Higher Education

The underlying purpose of this study is to examine the extent to which student-athletes are being academically successful at the community college. Consequently, this study seeks to make a contributions to the current literature by: 1) focusing exclusively on the impact of athletic participation at the community college; 2) providing an analysis of the individual background and academic performance characteristics of both student-athletes and the general student population, using longitudinal statewide and multi-institutional data; 3) providing further insight into the various pathways to degree completion and four-year attendance exhibited by students through multivariate analysis; and 4) proposing a view of student-athletes' academic success at the community college within a production function framework to better understand the correlation of athletic participation to persistence, degree completion, and four-year transfer. In the end, this study strives to increase national and state awareness of the academic successes and/or failures of student-athletes at the community college.

Definition of Terms

For the purpose of this study, the following definitions were used:

Academic Success is the completion of one's academic program at the community college leading to: a) a certificate or associates degree, or b) completion of academic requirement necessary to be admitted to a four-year institution.

Athletic eligibility is a set of minimum requirements as outlined by the institution, affiliated conference/league, or national governing board that a student must meet for initial eligibility, and maintain in subsequent terms, in order to continue participation in athletics.

Athletically-related financial aid is any financial aid awarded to a student in which the terms require the recipient to participate in an institution's intercollegiate athletics program.

College preparedness is determined by the number of content areas remediation is required prior to enrolling in college level credit courses.

Commission of Athletics (COA) is the governing body which governs and oversees intercollegiate athletics and student participation at California community colleges.

Delayed enrollment denotes any student that does not enter postsecondary education in the same calendar year in which they complete high school.

Division I, II, and III denotes a NCAA member institution's division for legislative and competition purposes. Division I members sponsor at least seven sports for men and seven for women (or six for men and eight for women) with two team sports for each gender; Division II members sponsor at least five sports for men and five for women (or four for men and six for women), with two team sports for each gender, and each playing season represented by each gender; and Division III institutions have to sponsor at least five sports for men and five for women, with two team sports for each gender, and each playing season represented by each gender. Division III member institutions do not provide athletically-related financial aid for their student-athletes.

National Collegiate Athletic Association (NCAA) is the governing body which oversees and governs intercollegiate athletics and student participation at four-year institutions.

National Junior College Athletic Association (NJCAA) is the governing body for athletics at community colleges in the United States and Canada, except for parts of Oregon and the states of California and Washington.

Pre-entry Characteristics include cognitive and academic variables such as level of college readiness, time between completion of high school and college entry, and college entrance exam scores (SAT, ACT, CPT).

Student-athlete is designated as any individual who receives athletically-related financial aid while attending a community college.

Student Transfer is any student who first enrolled in a community college, and in a subsequent term, enrolled in a four-year institution in Florida after completing at least one academic term.

CHAPTER 2 REVIEW OF LITERATURE

In order to develop the conceptual model for this study, and to better understand its contribution to the literature, I begin this chapter by operationally defining key terms and concepts that are essential to this topic and study. Next, I provide an overview of individual and institutional factors that have been found throughout the literature to affect community college students' persistence and academic success; provide an overview of literature on the academic behaviors and co-curricular experiences of student-athletes; and then describe previous theoretical frameworks that have been utilized in the literature to explain student persistence and success. Lastly, I present a view of student-athletes' academic success and persistence at the community college through the lens of a human capital theory (Becker, 1964; 1994).

The review of the literature provided in this chapter was organized with two primary purposes in mind. First, to explore constructs that have been identified in the literature as significant factors in predicting community college students' persistence and academic success, and secondly, to develop a conceptual model in which to examine these constructs as a way of enhancing our understanding and general knowledge of the persistence and academic success of community college student-athletes.

Key Concepts and Terms

Despite the abundance of empirical research on student persistence, retention, academic success, and transfer, definitions applied to the preceding terms and appropriate methods for measuring these outcomes have remained ambiguous and ill-defined (Hagedorn, 2005). A major reason for this ambiguity is due to the fact that no true consensus exists among higher education researchers and institutions on the most appropriate way in which to define or measure persistence and retention (Adelman, 1999; Hagedorn, 2005; Townsend, 2002). More specifically,

inconsistencies in the measurement of these student outcomes are most often found in the selection of students to include in the denominator of the utilized calculation formulas (Astin, 1971; Bean, 1990; Hagedorn, 2005; Tinto, 1987; Townsend, 2002). Throughout the following sections of this chapter, using examples provided in the higher education literature, I further discuss and operationally define persistence, retention, and other key terms and concepts that will be referred to throughout the remaining chapters of this study.

Student Persistence

The following explanation has been used by scholars and researchers to differentiate persistence from retention: Persistence is an individual measure of student's continuous or progressive enrollment in higher education until an intended educational outcome is accomplished, while retention is an institutional or system measure of a student's continuous enrollment from first year to second year (Hagedorn, 2005). Hagedorn (1995) also provides a rather easy to understand example to explain student persistence. She classified a persister as a "student who enrolls in college and remains enrolled until degree completion," and a non-persister as one "who leaves college without earning a degree and never returns" (1995, p. 2). While, the above examples of persistence place major focus on the student's successful completion of an intended outcome (i.e., degree or transfer), with no restriction on the time, Horn and Berger (2004) provide an example of persistence that relies on time and outcome to measure student persistence. In their study, Horn and Berger (2004) calculated five-year persistence rates and defined persistence as the percentage of students who were still enrolled or completed a degree after five years of initial enrollment.

Throughout the literature, persistence rates are calculated for students based on their academic behaviors at a single institution. However, such practices do not take into consideration student's lateral or vertical movements from institution to institution. For example, a student may

leave their initial institution to attend and subsequently earn a degree from another institution. In this example, the first institution may consider a student a non-persister because he or she left their initial institution prior to completing a degree, while the second institution considers the same student a completer or persister. Accordingly, many researchers suggest that system retention rates are more appropriate and accurate than formulas that only consider institutional retention or success rates (Hagedorn, 2005).

Student Retention

Retention rates are most often used as one-year institutional calculations of a student's enrollment from first year to second year. When calculating retention rates at institutions classified as less than four-year (i.e., community college), NCES only considers students that are first-time full-time (FTFT) enrolled and degree or certificate seeking (NCES, 2003). Not included in NCES retention calculations are students who initially enrolled during the fall term, but did not re-enroll the following fall term due to death, permanent disability, service to federal government through armed forces or foreign aid programs, or due to participation in official church missions (Hagedorn, 2005; NCES, 2003). Also excluded from retention calculations are students who initially matriculated during the spring term of an academic year.

Academic Success

Within the context of higher education research, the term "academic success" can be applied to varying degrees of accomplishments experienced by students during their academic tenure. Because the term "academic success" is often loosely defined in the literature, the term has been described as a "value laden" term (Floyd, 1988, p.6) used to signify the completion of a student's intended educational goals or aspirations. Furthermore, Braxton (2003) asserted that academic success is defined by both institutions and individual, as it relates to the extent to which each achieves their intended goal(s). Within the context of the current higher education

literature, researchers have used various proxies to measure and quantify student success.

Examples of proxies used in the literature to measure student success at the community college include: community college grade point average (GPA) (Schulz, 2007); job placement (Azari, 1996; Laanan, Hardy, & Katsinas, 2006); professional certificate and associate's degree attainment (Opp, 2001; 2002); four-year transfer (Dougherty & Kienzl, 2006; Hagedorn & Lester, 2006; Hagedorn, Moon, Cypers, Maxwell, & Lester, 2006; McCormick & Carroll, 1997; Romano & Wisniewski, 2003); and four-year degree attainment (Alfonso, 2006; Lee, Mackie-Lewis, & Marks, 1993; Philibert, Allen, & Elleven, 2008).

Another important aspect to consider when measuring student success, in addition to the selection of a proxy variable that appropriate for your population, is the selection of a time parameter in which to measure the selected outcome (i.e., two semesters, two years, 5 years, etc.). Several examples of time-parameters or time periods have been provided in the literature to measure student outcomes at community college and four-year institutions. For example, the National Collegiate Athletic Association (NCAA) created the Graduation Success Rate (GSR) and Academic Success Rate (ASR) measures to quantify six-year graduation rates for student-athletes attending Division I and Division II institutions, respectively (NCAA). Another widely used index is the SRK (Public Law No: 101-542) which set time parameters at one and one-half the normal time for degree completion. Per SRK guidelines, institutional completion or success rates are measured on the percentage of FTFT enrolled degree-seeking students who complete degree program requirements within 150% of the estimated time for degree completion (Bailey, Calcagno, Jenkins, Leinbach, & Kienzl, 2005; Hagedorn, 2005).

The above examples of student success rate calculations have been used to measure student success at both community colleges and four-year institutions. However, regardless of the time

parameter or the model selected, researchers have noted several disclaimers and warnings that must be considered when calculating success rates for students attending community colleges.

The following examples are provided to illustrate the atypical enrollment behaviors of community college students, and the effect these patterns have on student success rates. First, community college students often enroll in different community colleges prior to earning a degree or transferring to a four-year institution. Second, a student may enroll at a community college with intentions of earning an associate's degree, but may decide at a later time that completing additional courses without a degree will suffice. Likewise, a student may enroll with intentions of completing a course for job-related training and decide later to pursue a certificate or an associate's degree (Hagedorn, 2005). Accordingly, these nomadic enrollment patterns and frequent changes in students' educational aspirations make calculating student success rates at the community college rather complicated (Hagedorn, 2005; Hagedorn & Castro, 1999; Maxwell, Hagedorn, Brocato, Moon, & Perrakis, 2002).

As the above examples have illustrated, the enrollment behaviors of community college students can drastically affect institutions and researchers ability to gain an accurate picture of the true rates of success exhibited by students. Several factors have been attributed to students' movement between institutions, and the frequent changes in their educational aspirations and goals, in an attempt to better understand the causes of enrollment behaviors exhibited by students at the community college. Researchers have referred to these phenomena as cooling-out (Clark, 1960) and warming-up (Baird, 1971; Bragg, 1998; Hagedorn, 2004; Opp, 2001).

Cooling-out

Cooling-out (Clark, 1960) has been described as a process in which institutions or institutional representatives knowingly or inadvertently re-direct students toward educational goals that are more compatible to their academic abilities to avoid future conflict,

disappointment, or failure. Clark (1960) postulates that cooling-out, in part, diverts the educational aspirations and expectations of students by guiding them away from associate degree or four-year transfer programs of study into certificate or non-degree programs. Clark considered cooling-out a major catalyst for student departure at the community college.

Warming-up

In contrast, researchers suggest it is also likely that a student's intended academic aspirations will increase as a result of their educational and personal experiences at the community college. The opposite behavior of cooling-out is referred to as "warming up," which posits that students enroll with either no aspiration of obtaining a degree or with aspirations of completing a certificate program, but eventually warm-up, or increase their degree aspirations, to include an associates or bachelor degree (Baird, 1971; Bragg, 1998; Hagedorn, 2004; Opp, 2001).

Factors leading to the cooling-out or warming-up of students can greatly impact retention, persistence, and student success rates, as well as the calculation of these outcomes by institutions, higher education systems, and researchers. For example, students who declare graduation as a goal but decide later to obtain additional credits in lieu of a degree, will be counted as a non-completer or failure, regardless of the fact that they successfully met their intended goal. Likewise, students who self-select a non-degree program of study but eventually transfer to a four-year institution will not be considered academically successful because they were not originally designated as a possible transfer student. These phenomena are important to this conversation of student-athletes at the community college, as this study examines the impact of athletic participation on student persistence toward an earned degree or four-year transfer. More specifically, the impact of athletic participation on the probability of cooling-out or as a warming agent to increase the likelihood of four-year transfer or degree attainment is examined.

Transfer Students and Four-Year Transfer

The traditional linear transfer is a type of transfer that is most studied and perhaps most understood by researchers (Townsend, 2002). In linear transfer, the community college serves as a stepping stone for students toward upward educational and social mobility, which is realized through completion of their first years of general education requirements prior to attending a four-year institution to complete a bachelor's degree program of study (Laanan, 2003). Berkner, Horn, and Clune (2000) suggested the transition from the community college to a four-year institution is one of the most important forms of transfer, "because its success (or failure) is central to many dimensions of state higher education performance, including access, equity, affordability, cost effectiveness, degree productivity, and quality" (p. 3).

Beyond describing the transition of a student from the community college to a four-year institution, the term "transfer" encompasses a number of other possible transitions between institutions and institutional types that are likely to occur. Students are likely to make several transitions between community colleges, between four-year institutions, and between four-year institutions and community colleges, before obtaining a degree or leaving college completely (Berkner et al., 2000; Hagedorn & Castro, 1999). As with other terms that have been discussed in this section, researchers have applied a range of definitions to the term "transfer," what it means to be transfer-ready, as well as utilized several methods for calculating student transfer rates.

A four-year transfer student is defined as any student who attends a community college and who later enrolls in a four-year institution during a subsequent academic term (Romano & Wisniewski, 2003). A frequently used control for measuring student transfer is any student who accumulates, within four-years of initial enrollment, 10 or more credits hours prior to attending a four-year institution (Bradburn, Hurst, & Peng, 2001; Cohen & Brawer, 2003). The Center for the Study of Community Colleges (2001) considers a transfer student as any student who enters

the community college with no prior college experience and who earns at least 12 college credits hours at both the community college and four-year institution; the National Effective Transfer Consortium (NETC) views a transfer student as a student who transfers to a four-year institution during the fall term after attending and completing at least 6 credit hours at a community college during the previous semester (Berman, Curry, Nelson, & Weiler, 1990; Townsend & Wilson, 2006).

Researchers have also provided various models in the literature for calculating four-year transfer rates. These models have include transfer students, or possible transfer students, that have stated four-year transfer as a goal, were enrolled in a transfer degree program, or completed a transfer degree program (Bradburn, Hurst, Peng, 2001; Hagedorn, 2005). Still, other scholars consider any student who enters the community college and subsequently earns any sum of course credits as a possible four-year transfer student. Dougherty and Kienzl (2006) examined the likelihood of student transfer to a four-year institution for all community college entrants, regardless of intent or degree program of study. The authors proposed that by considering all community college entrants as possible transfer students, “they can then explicitly bring into the analysis the question of the relationship between transfer propensity and having a certain level of educational aspirations upon entering college” (Dougherty & Kienzl, 2006, p. 458).

In contrast to previously discussed methods for calculating transfer rates, Hagedorn and Lester (2006) suggest transfer readiness as a “less error-prone” (p.835) method for measuring student transfer to the four-year institution. Hagedorn and Lester (2006) define transfer readiness as the “progress of a community college student on the path to transfer while still enrolled in the community college” (p.835). Benefits of using transfer readiness over other methods is that transfer readiness is within the purview of the community college, it can be easily measured, and

it does not rely on time and place. In Florida, transfer readiness is accomplished if a student completes a 36-hour general education block at any community college or state university. According to Florida bylaws, public four-year institutions and community colleges must accept, in total, general education credits hours previously earned at another public institution in the state (Florida Department of Education).

Regardless of the method used for measuring graduation and four-year transfer rates, community college advocates have been adamant in recent years that student success rates are misleading. The arguments of community college administrators and their constituents are steeped in previous research, which illustrate that a majority of students enter the community college with no intention of graduating or transferring to a four-year institution (Bailey, Calcagno, Jenkins, Leinbach, & Kienzl, 2006; Brint & Karabel, 1989; Dougherty, 1994). They further suggest that “criticizing community colleges for low completion rates would reflect a misunderstanding of their mission and the diverse goals of their students” (Bailey et al., 2006, p. 494).

The preceding examples provide insight into the convoluted processes that have been utilized by researchers to measure student outcomes at the community college. Though not perfect, these efforts to measure student success are essential to the continued efforts of higher education constituents to improve the performance of community college students, and to prepare students for employment or continued study at four-year institutions. In the present age of increased institutional accountability, the documentation of student outcomes is imperative to providing valuable information to stakeholders regarding student outcomes.

In sum, the literature provides various definitions and methods in which to measure persistence, transfer, and student success within the context of community colleges. The present

study utilized several of the examples provided in the literature to measure the academic success of student-athletes in the state of Florida. Specifically, using a maximum of three and one-half years (or 11 academic semesters), the following definitions and interpretations of persistence, degree completion, and four-year transfer were used in this analysis: academic success was measured by the attainment of a degree (one-year certificate, associate's degree), or four-year transfer; persistence was measured by continuous enrollment to degree attainment (one-year certificate, associate's degree) or four-year transfer; and four-year transfer was accomplished if a student completed any sum of credits at the community college prior to subsequently enrolling in a public college or university in the Florida State University System.

Additionally, when measuring four-year transfer rates, scholars have primarily focused on students enrolled in degree and/or transfer programs at the community college (Dougherty & Kienzl, 2006). The reason many scholars have limited samples to students that express transfer as a goal is to gain a better understanding of student intentions and the effect these intentions on student outcomes. However, limiting analysis of transfer rates to students in transfer or degree programs, and those who have earned a degree, provides a biased view of transfer rates (Dougherty & Kienzl). This study does not set degree attainment or enrollment in a degree and/or transfer programs as a requisite for measuring four-year transfer. The above interpretations and definitions for persistence and academic success were utilized to provide the most accurate picture of the academic behaviors of student-athletes, within the limitations of the utilized data set. Further explanation and attention to these parameters will be provided in later chapters.

Individual and Institutional Characteristics

This study expands upon previous research on the impact of individual and institutional characteristics on the persistence and academic success of students attending the community

college. The following section provides an overview of the individual and institutional factors utilized in this study, and provides a literary foundation for the incorporation of these independent and dependent variables in the conducted analyses. Specifically, I will discuss the impact of institutional enrollment size and location (i.e., rural, urban, suburban), and individual background characteristics (i.e., race, gender, SES), college readiness, and athletic participation on student outcomes at the community college.

Over the past decade, an increase has been seen in the volume of higher education research pertaining to the relationship of individual and institutional characteristics to community college student's academic success (Dougherty & Kienzl, 2006). Researchers have examined the impact of institutional mission (Bragg, 2001; Dougherty & Townsend, 2006; Dowd, 2003), institutional size and location (Bailey, Calcagno, Jenkins, Kienzl, & Leinbach, 2005), student support services (Keim & Strickland, 2004), individual characteristics (Flowers, 2006; Hagedorn & Cepeda, 2004; Hagedorn & Lester, 2006), social and academic integration (Bailey, Calcagno, Jenkins, Leinbach, & Kienzl, 2006), and college readiness (Haden, 2000; Roueche & Baker, 1987; Roueche & Roueche, 1994) on student goal attainment. The following section will provide an overview of studies and findings that are pertinent to this study, and provide a review of the theoretical frameworks and models that have been previously employed to explain the impact of institutional and individual factors on student success.

Community College Mission

Community colleges are a substantial prong in the production wheel of the American higher education system. Over the past century, community colleges have fulfilled a multiplicity of roles by providing individuals open access to credit and non-credit educational and vocational training programs and services (Bragg, 2001). Because community colleges hold varied goals and objectives, they are often viewed as both reproducers of social inequality and purveyors of

social mobility (Alfonso, Sun, & Alfonso, 2006; Lee, Mackie-Lewis, & Marks, 1993). The “contradictory” (Dougherty, 2004) community college mission began nearly a century ago when community colleges put at the forefront of their agenda four-year transfer (Bragg). Since that time, community colleges have supplemented the transfer mission to include various educational and vocational programs designed for workforce training and, in many states, programs leading to a baccalaureate degree (Anderson, Sun, & Alfonso, 2006; Brewer & Gray, 1999).

Scholars assert that the institutional mission of community colleges can be categorized by core, vertical and horizontal dimensions (Bailey & Morest, 2004). The core dimension of an institution’s mission focuses on developmental and academic programs leading to associates degrees, the vertical dimension includes dual enrollment, Tech Prep, four-year transfer, the community college baccalaureate (CCB), and undergraduate honors programs, and the horizontal dimension encompasses noncredit courses intended for vocational training, continuing education, General Education Development (GED) preparation, English as a Second Language (ESL), and specialized educational summer camps for children (Bailey & Morest).

The mission espoused by an institution or state community college system is what ultimately determines how the institution or system views, defines and measures student success (Bailey, Calcagno, Jenkins, Leinbach, & Kienzl, 2006). For example, articulation agreements between community colleges and four-year institutions indicate an emphasis being placed on student transfer from the community college to a four-year institution. Articulation agreements are intended to facilitate easy transfer of student credits from the community college to a four-year institution (Anderson, Sun, & Alfonso, 2006; Brewer & Gray, 1999). There are varying degrees to which articulation agreements are developed between institutions in the U.S. There are currently 12 states (Alaska, Arkansas, Colorado, Florida, Kansas, Ohio, Rhode Island, Texas,

Utah, Virginia, Washington, and West Virginia) with state-mandated articulation agreements (Anderson, Sun, & Alfonso, 2006). In addition to state mandated agreements, four-year institutions have formed articulation agreements with community colleges within their state that are not endorsed or mandated by law (Anderson et al., 2006).

In a review of the literature, a number of studies can be found that have examined the varying degrees of state articulation agreements (i.e., formal and legally based policies, state system policies, voluntary agreements), but few have examined the impact of these agreements on student transfer rates (Anderson et al., 2006). The study conducted by Anderson and colleagues (2006) is one of the few studies available which examines the relationship of mandated articulation agreements to student success.

Anderson and colleagues (2006) examined the probability of student transfer in states with state-mandated articulation agreements in place by 1991, compared to states with no state mandated articulation agreement. Their findings suggest, when holding individual characteristics (demographic, educational, SES, enrollment characteristics) constant, students in states with articulation agreements were found to have the same probability of transferring, within five years of initial enrollment, as students who enroll in states without agreements supported by law. A finding from Anderson and colleagues' (2006) study that is most salient to the present study, is that student transfer propensity increased when considering the interaction of state articulation agreements and the award of financial aid. Their study suggested the award of financial aid was a significant factor in increasing student transfer to a four-year institution within states with state-mandated articulation agreements, compared to states without agreements. The findings from Anderson and colleagues' (2006) study bring to the forefront the interaction between individual

characteristics and financial aid awards, such as athletically-related aid, in increasing transfer rates for student enrolled at the community college.

Institutional Characteristics

The following section provides examples of the effect of institutional characteristics on student outcomes at the community college. To begin, Bailey, Calcagno, Jenkins, Kienzl, and Leinbach (2005) examined the relationship of institutional characteristics to student outcomes (i.e., persistence, completion, transfer) using a production function framework. The authors found that an institution's enrollment size was a significant factor in predicting student degree completion and four-year transfer. Bailey and colleagues (2005) proposed that students attending institution with enrollment sizes between 1,001 and 5,000 full-time equivalency (FTE) were approximately 15 percent less likely to have a successful outcome, compared to students attending institutions with enrollment sizes fewer than 1,000 FTEs. Moreover, Bailey and colleagues (2005) found that the percentage of part-time faculty members can be a significant factor in predicting student outcomes. Institutions with large percentages of part-time faculty correlated with a decline in completion rates for students in associate degree programs. The findings from this study are consistent with previous studies that have credited smaller institutions with providing greater opportunities for students to be integrated and active participants in their environment, leading to higher completion rates (Astin, 1993; 2005).

Bailey and colleague's (2006) study, deeply-rooted in the literature on student social and academic integration (Astin, Tsui, and Avalos, 1996; Pascarella and Terenzini, 2005, 2005), found lower student completion rates at institutions where more than 50 percent of the general student population consisted of women, minority, or part-time students. Bailey and others (2006) concluded from their analysis of over 900 community colleges (using SRK (1990) degree completion time-perimeters) that large enrollments of part-time students, Students of color, and

female students decreased the probability that FTFT enrolled students would complete a degree. The authors concluded that FTFT enrolled female students have a higher graduation rate than FTFT male students. However, but large proportions of female students along with large proportions of part-time students were associated with lower student degree completion rates for all students. Students attending institutions with 75 percent or more of the total student population comprised of ethnic/racial minority students were 28 percent less likely to graduate compared to students attending institutions with smaller minority student populations (Bailey, et al., 2006).

Individual Background Characteristics

Scholars have further suggested that specific individual characteristics have a strong relationship to student persistence, degree attainment, and four-year transfer (Dougherty & Kienzl, 2006; Laanan, 2003). Dougherty and Kienzl (2006) and Laanan (2003) found SES to be a significant factor in predicting degree aspirations and four-year transfer for community college students. Dougherty and Kienzl (2006) using a social and academic integration model (Braxton, 2000; Tinto, 1993) and Laanan (2003) a status attainment (Blau & Duncan, 1967) and undergraduate socialization (Sewell & Hauser, 1972; Sewell, Haller, & Ohlendorf, 1970) theoretical framework, each concluded that students from lower SES backgrounds were less likely to complete a degree compared to students from higher income families.

Dougherty and Kienzl (2006), in their analysis of data from the National Education Longitudinal Study of the 8th Grade (NELS: 88) and beginning Postsecondary Student Longitudinal Study (BPS: 90), asserted that the probability of transferring from a community college to a four-year institution was higher for single students with no dependents and for students were not employed or work less than 40 hours a week. Additionally, Dougherty and Kienzl (2006) concluded that students whose parents completed college and earn higher annual

incomes, had a significantly higher probability of transferring to a four-year institution than students from lower SES backgrounds.

Scholars further suggest that gender and enrollment status (full-time/part-time) play a significant role in predicting student academic performance and degree completion (Bailey, Calcagno, Jenkins, Leinbach, & Kienzl, 2006; Laanan, 2003). Bailey and others (2006) asserted that female students out-perform male students and have an increased probability of completing a degree at the community college, compared to their male peers. Recent studies have further suggested that students with higher degree aspirations have a greater probability of graduating with an associate's degree or transferring to a four-year institution. Bailey, Leinbach, and Jenkins (2006) suggested that students who enter the community college with intentions of eventually earning a bachelors or graduate degree are more likely to complete a certificate, associate's degree, or transfer to a four-year institution within six years, compared to students with no advanced degree aspirations. Bailey, Leinbach and Jenkins (2006) found that students who aspired to higher educational attainment were 15 percent more likely to have a successful outcome at the community college than students with no bachelor degree aspirations.

Horn, Peter, and Rooney (2002) explored the impact of individual characteristics on degree completion for community college students in a study conducted for the National Center for Educational Statistics. Using a national sample of the 1999-2000 undergraduate student cohort, Horn and colleagues (2002) found that 75 percent of students have at least one risk factor - a student attribute or characteristic that was negatively correlated to degree completion. Student risk factors, as noted by Horn and colleagues (2002), included: delayed entry to college, high school dropout or GED recipient, part-time enrollment; financially independent, single-parent status, have dependent children or spouse living within their household, or are employed full-

time. Horn and colleagues (2002) argued that students with these particular risk factors were statistically less likely to complete college compared to students who were not restricted by such characteristics. The authors further suggested that some student groups are particularly disadvantaged when entering the community college, such as Native American/Alaska Native, Black and disabled students. Students from these backgrounds were found to have, on average, between two to three of the above risk factors. Horn and colleagues (2002) study suggests that Native American/Alaska Native, Black and disabled students enter college severely disadvantaged and are more likely to leave college without a degree.

Student-Athlete Experience

The preceding section provided a review of the literature on the effect of institutional and individual factors on student outcomes. The forthcoming section will provide a review of the literature which speaks to the effect of institutional and individual characteristics on the experiences of student-athletes at the community college. Despite the maturation of research on community college student outcomes, few studies have examined the academic behaviors of student-athletes and the effect of individual and institutional factors on student-athlete's academic success at the community college (Knapp, 1988). This section provides an overview of both quantitative and qualitative studies that have explored the institutional experiences and academic outcomes of community college student-athletes.

Knapp and Raney (1988) and Sawyer (1993) each conducted institutional studies on the enrollment behaviors of community college student-athletes over a decade ago. Knapp and Raney (1988) compared student-athletes' academic performance at the community college to their performance at the University of Nevada Las Vegas (UNLV), and to a group of UNLV students and student-athletes with no prior community college experience. Though dated, Knapp and Raney's (1988) study provides a historical context in which to view the academic behaviors

of student-athletes at the community college. The authors found that physical education departments were the leading source of credits earned for all groups of students in their sample. Grades earned in physical education courses were also found to be, on average, higher than grades earned in other non-physical education credit courses.

Knapp and Raney (1988) attributed the excessive number of physical education credits earned by student-athletes to a lack of oversight by institutions and community college athletic governing boards. However, recent legislations put forth by the NJCAA and NCAA, have helped to curb the number of physical education and other non-degree relevant courses taken at the community college (Hall, 2007). Specifically, new rules have been put in place by the NJCAA to ensure “satisfactory progress within an approved college program or course” (“Eligibility Rules”, 2008, p. 3), and NCAA requires community college transfer students to complete at least 40 percent of their course of study at the community college to be eligible for participation in athletics at a Division I institution.

Sawyer (1993) examined the impact of athletic participation on retention of community college transfer students attending a four-year institution in the California State University System (CSU) and the influence of individual characteristics (i.e., terms of admission, gender, ethnicity, age, and sport category) between athlete and non-athlete students. Using a social and academic integration lens (Astin, 1975; Bean & Metzner, 1982, 1985; Pascarella, 1985; Spady, 1971; Tinto, 1975), Sawyer examined differences in five year retention rates between groups of transfer students based on athletic status (athlete/non-athlete), and terms of admission to the CSU system (e.g., regular admission or special admission). According to Sawyer, students admitted to the four-year institution, based on standard admission requirements, were retained at higher rates than special admitted students. Additionally, special admitted students were retained at higher

rates than student-athletes, female student-athletes were retained at higher rates than male athletes, and minor sport athletes (e.g., men's and women's cross-country-track, tennis, and swimming) were retained at higher rates than students participating in major sports (e.g., men's baseball, football, basketball; and women's basketball, softball, volleyball).

Palomar College (2002) tracked the persistence and academic performance of student-athlete cohorts from the 1988-1989 and 2001-2002 academic years, and compared their performance to a sample of FTFT enrolled students in the general student population over the same time period. Compared to the general student population, student-athletes in their study earned proportionally more associate's degrees, had higher five-year retention rates, and completed their studies in less time than students in the general population. It was found that 21 percent of athletes in the fall 2000 cohort received an associate's degree by their fifth semester, compared to approximately 4 percent of students in the comparison group. It must be noted, however, that the Palomar College (2002) report does not offer an explanation for the differences found in the academic performance and retention rates for athletes and non-athlete students. The addition of information regarding the factors that contributed to their results would be a valuable addition to the limited research on student-athletes at the community college. The present study intends to add to the limited research provided on this topic by examining the impact of individual and institutional characteristics on student-athletes' academic outcomes.

Two additional studies are also important to understanding the academic performance of student-athletes at the community college. Kanter and Lewis (1991) and Carr, Kangas, and Anderson (1992) conducted multi-institutional studies on the academic experiences of student-athletes at the community college. Kanter and Lewis (1991) examined differences in educational

goal achievement (measured in college GPA) between student-athletes and non-athlete students using transcript data from 11 community colleges in California.

Similar to Sawyer (1993), Kanter and Lewis (1991) found that female athletes earned higher GPAs and completed more credit hours than men, and that all athletes completed more credit hours, earned slightly lower GPAs, and completed fewer transfer units per year compared to the general student population. Kanter and Lewis (1991) further suggested that differences exist in the academic performance of Student-athletes of color and non-athlete Students of color at the community college. Results from Kanter and Lewis's (1991) study indicated that Black and Hispanic male student-athletes earned higher GPAs than Black and Hispanics male students in the general student population.

In another reviewed study, Carr, Kangas, and Anderson (1992) examined the influence of athletic participation and specialized student support programs for Black male students on their persistence through four semesters at two California community colleges. From this multi-institutional study, it was found that 100% of Black males participating on the basketball team persisted through four semesters, and 67% of all Black male athletic participants completed four semesters, compared to only 33% of Black male students in the general student population. Carr and others (1992) suggested that the proliferation of student social and academic integration manifested through sport participation, and the encouragement and mentorship provided by athletic coaches and other institutional members, contributed to the differences found in retention rates between Black male non-athlete students and student-athletes. From their analysis, Carr and others (1992) suggested the development of student support programs for Black male and female non-athlete students as a way to replicate rates of retention and graduation rates as those found within the student-athletes sample.

In addition to the studies that have been discussed in the previous section, researchers have provided descriptive analysis of community college student-athlete participation (Brown, 1988; Castaneda, Katsinas, & Hardy, 2006; Reapple, Peery, & Hohman, 1982), and explorative studies on the benefits of athletic participation on student experiences and development (Nanney, 2008), the impact of academic support services on academic success (Hall, 2007; Keim & Strickland, 2004), student's academic achievement and the influence of athletic motivation (Cigliano, 2006), and student career development (Kornspan & Etzel, 2001).

Unfortunately, many of the studies that will be discussed are limited in scope, as the researchers examined a single institution or employed qualitative research conduct their analysis. That the scant empirical research on topics pertaining to student-athletes and the methodological limitations of the published studies as a whole, lends itself to further exploration of the successes, failures, and academic behaviors of community college student-athletes.

The following section provides an overview literature specific to the individual characteristics and experiences of community college student-athletes, in order to expand our general knowledge. Though several studies are available on the academic behaviors of student-athletes at four-year institutions, this review focuses specifically on studies that are relevant to athletics and the experiences of student-athletes at the community college.

Characteristics of Student-Athletes

There is little known about the characteristics of student-athletes at the community college beyond gender and racial compositions provided in the descriptive analyses from institutional studies. To better understand student-athletes as a sub-student group, a deeper awareness of the ways student-athletes at the community college differ, both academically and demographically, from students in the general student population, is needed. The following

section provides an overview of the available literature which speaks to the academic and demographic characteristics of community college student-athletes.

Hall (2007) and Brown (2004) referred to community college student-athletes as *at-risk* students because they are less likely to complete an associate degree or certificate, and are more inclined to perform lower academically than their non-athlete peers. Hall (2007) and Brown (2004) assert that the individual characteristics of a large percentage of student-athletes can be characterized as first generation, academically underprepared, undecided on academic major, learning disabled, and are more likely from an under-represented ethnic/racial group. Previous research tells us that student characteristics, such as first generation, academically underprepared, and learning disabled, are likely to reduce the probability of student degree attainment and four-year transfer.

Accordingly, Hall (2007) proposed that a “different type of learning environment is needed to promote the success and retention of community college student-athletes” (p. 3). In his 2007 qualitative analysis, Hall explored the impact of a learning community on student-athlete’s retention and academic success at a single institution in California. From Hall’s institutional case study, the conclusion was drawn that student-athletes categorized as academically at-risk performed better academically at the community college, when involved in a learning community organized to connect students with similar academic goals and co-curricular experiences. Hall (2007) suggested that learning communities comprised of students with similar academic and extracurricular activities, provide student-athletes with peer support and the necessary motivation to succeed in higher education.

In another institutional case study, Richards (1990) provided a descriptive analysis of athletic participation by gender, age, race and educational aspiration (i.e., degree, four-year

transfer). In Richards' (1990) report of Modesto Junior College (MDJ), a single campus community college located in California, he found that a majority of student-athletes attending MDJ during the 1988-1989 academic year, were White (23% were Students of color), 84 percent were traditional-aged (under 21 years of age), and 96 percent had obtained a high school diploma prior to their initial enrollment. In comparison, 86 percent of students in the general student population had obtained a high school diploma prior to their initial enrollment. Furthermore, student-athletes in the sample utilized by Richards (1990) maintained an overall mean 2.10 GPA (physical education courses not included), and 46 percent of the student-athletes stated transfer to a four-year institution as their intended goal. In addition to the studies that have been discussed, Lewis and Marcopulos (1989) conducted a five year longitudinal study of athletic participation in at San Joaquin Delta College (SJDC) during the 1983-1984 and 1987-1988 academic years. From Lewis and Marcopulos (1989) analysis, it was concluded that Black students represented between 12% and 17% of the total student-athlete population, but represented only 5% to 7% of general student population. Lewis and Marcopulos's (1989) report further illustrated that 25 percent of athletes enrolled in 1983 completed an associate's degree and maintained a GPA between 2.08 and 2.21 over the five-year period of the study.

The literature also provides examples of studies that have utilized descriptive statistics to examine the enrollment patterns of student-athletes, and the type of grades earned by athletes in various types of courses (i.e., remediation, college level courses). For example, Hobneck, Mudge, and Turchi (2003), in their single institutional study, concluded that student-athletes were not aptly prepared to handle the academic or athletic requirements that were necessary to be successful in their freshmen year in college. Hobneck and colleagues arrived at this troubling conclusion based on their analysis of transcript data for student-athletes attending the single

institution studied. The authors found that 14% of credit hours attempted by all athletes resulted in a grade of F (failure) or W (withdraw), and 17% of the total hours attempted were in developmental or remediation courses. In sum, the authors concluded from their institutional study that the combination of inflexibility in daily athletic schedules and the lack of academic preparedness decreased students' year to year retention rates, and the probability of maintaining minimum academic eligibility requirements necessary to continue athletic participation their sophomore year.

Benefits of Athletic Programs to Institutions and Student-Athletes

A review of the literature provides further insight into the overall institutional (Castaneda, 2004; Castaneda, Katsinas, and Hardy, 2006) and individual benefits (Berson, 1996; Boulard, 2008; Cigliano, 2006) of athletic programs and teams at the community college.

Overall, the literature on the institutional and individual benefits of athletic programs suggests that athletic programs and teams at the community college are beneficial to both institutions and student participants alike (Castaneda, 2004; Castaneda, Katsinas, & Hardy, 2006). First, Cohen and Brawer (2003) wrote that "Athletic programs [at the community college] are presumptively planned so that student-athletes can enjoy the benefits of extracurricular activity along with academic programs" (p. 209).

Second, Castaneda (2004) and Castaneda, Katsinas, and Hardy (2006) posited that institutions benefit from the presence of an athletic program through increased enrollment of full-time students, both student-athletes and non-athlete students alike. As per National Junior College Athletic Association (NJCAA) eligibility standards, a student must be enrolled full-time at the community college to receive athletically-related financial aid, and to participate in intercollegiate athletics. As a result, athletic programs can be attributed with bringing more full-time enrolled students to an institution. Castaneda (2004) and Castaneda and colleagues (2006)

further argue that athletic programs, and increased institutional enrollment of full-time students, benefit institutions through increased revenues to the college through state FTE based funding formulas.

Researchers have also suggested that athletic programs at community colleges have a significant impact on the increased enrollment of non-athlete students as well. The benefits of sponsored athletics programs at the community college are extended to the general student population through opportunities to participate on athletic teams as non-scholarship participants, and by enhancing their overall collegiate experience of traditional-aged students at the community college (Berson, 1996; Castaneda, 2004; Castaneda, Katsinas, Hardy, 2006; Rishe, 2003).

Last but not least, researchers and athletic administrators believe that athletic programs at the community college encourage students from minority and disadvantaged backgrounds to attend college and participate in college sports. The opportunity to participate in athletics at the community college provides an avenue for many students that would have never considered attending college at all, if not afforded the opportunity through athletic participation (Boulard, 2008). In a recent article, Boulard (2008) discussed the influence of athletic programs to draw diverse groups of prospective students and student-athletes to the community college. Boulard (2008) suggested that athletic programs and community colleges have been known for reaching out to athletically-talented Students of color, first-generation college entrants, and those from lower SES backgrounds. For first generation students, Students of color, and those from low SES, athletic participation at the community college is considered a positive factor for nurturing the academic success of student-athletes, rather than the common perception of athletics as a hindrance to student's academic focus and attention.

Berson (1996) found that student-athletes attributed their continuation in college to their participation in athletics and factors as full-time attendance requirements as being partially responsible for their continued enrollment. Cigliano (2006) interviewed administrators, coaches, and students in the Tennessee Board of Regents community college system and found that student mentoring by coaches and the academic and personal assistance made available to them by faculty and staff members were most beneficial to their student's academic success and progress toward degree completion. Cigliano posits "the opportunities to participate in athletics at the community college gave them [student-athletes] guidance and assistance in obtaining educational opportunities and planning their career paths" (p. 92).

Support Services on Academic Success

Student affairs offices at the community college also play a major role in assisting student-athletes to be successful in accomplishing their academic pursuits. Significant progress has been made over the past four-decades to increase the scope and availability of services offered to students and student-athletes at the community college (Mattox & Creamer, 1998). Since this time, many community colleges have instituted support services and made available financial resources to hire support staff specifically to assist student-athletes in their academic pursuits (Druehl, 1992; Mattox & Creamer, 1998). In 1992, Druehl explored the impact of student services on the success of student-athletes at the community college. Specifically, Druehl (1992) examined the relationship between the academic achievement of football players (measured by semester GPA) and the support services provided to them at their institution.

Druehl (1992), using a social system model (Getzels, 1968), found no significant relationship between football players' grade point average during the sport season, even when considering the combination of counselor contact, participation in orientation and the development of an education plan. However, when counselor contact was isolated from

participation in orientation and the development of an education plan, Druehl (1992) found a significant positive effect on student's GPA during their sport season. Druehl (1992) proposed that football players benefited academically from increased counselor contact, which suggests that support services have a positive effect on student-athletes' academic performance when considering student's GPA.

Two additional studies also examined the impact of programs and services at the community college on student-athletes' academic success. First, Hobneck, Mudge, and Turchi (2003) conducted an assessment of an institutional program aimed at improving the academic success and retention of student-athletes at a single campus community college in Illinois. According to Hobneck and colleagues (2003), the completion of student educational development plans, enrollment in life skills classes, and regularly administered academic progress reports from athletes' faculty members, were essential elements in promoting and encouraging the academic success of athletes. Mora (1997) examined the existence of academic support programs for student-athletes at a California community college. Mora (1997) concluded that institutions had a substantial number of programs in place to support student-athletes academically, including programs specifically designed to assist students to make the transition to a four-year institution.

The studies conducted by Hobneck, Mudge, and Turchi (2003) and Mora (1997) highlight the impact student services and support staff have on the academic success of student-athletes at the community college. As previous literature discussed in this chapter have vehemently argued for the importance of athletics at the community college (e.g., provide access to higher education for students from diverse backgrounds), Hobneck, Mudge, and Turchi (2003) and Mora (1997) illustrate the importance and necessity of support services at community colleges to support

student-athletes once they arrive on campus. From the studies conducted by Hobneck and colleagues (2003) and Mora (1997), the conclusion can be made that athletic programs and institutional support services are essential to the subsequent support of student-athletes at the community college.

Academic and Athletic Motivation on Academic Success

The literature on the academic motivation of student-athletes at the community college provides yet another context in which to explore differences between student-athletes and non-athlete students at the community college. While there are no variables included in the present analysis to measure athletic and academic motivation due to limitations of the data, student's motivation toward sport and academics is salient to this conversation. Throughout the literature, authors have provided evidence that student participation in athletics is a significant motivation and catalyst for student's academic success (Gaston-Gayles, 2004; Hawkins, 1999; Parmer, 1994; Weatherspoon, 2007), and others have suggested that athletic motivation is a major enticement for prospective student-athletes to attend college. For instance, Parmer (1994) termed the desire to employ sports as a means toward social mobility as the "the athletic dream" (n.p.). Palmer (1994) defined the athletic dream as a "multidimensional set of behaviors and fantasies propelled by the desire to pursue super-stardom and upward mobility through sport participation: the ultimate result is a potential professional athletic career where 'the dream' can be lived out" (n.p.). In addition to the idea that athletics is a vehicle for social mobility via sport participation at the professional level, researchers have also explored the impact of athletic participation in increasing the desire of student-athletes' to succeed academically (i.e., higher GPA), and the impact of sports in increasing student-athletes' academically-related goals, such as degree completion and four-year transfer (Berson, 1996; Schulz, 2007).

Schulz (2007) and Berson (1996) suggested participation in athletics at the community college, and full-time enrollment eligibility requirements as instituted by junior college athletic governing boards, contributed to student's academic success. Using the Student-Athlete Motivation toward Sport and Academics Questionnaire (SAMSAQ), Schulz (2007) examined the impact of academic and athletic motivators on student-athletes' desire to succeed academically (measured by college GPA) at the community college. Schulz (2007) found that female athletes performed better, or were more motivated, than male athletes; White athletes were more motivated than Student-athletes of color. Additionally, the academic motivation of student-athletes can also be measured in aggregate by examining student-athlete degree aspirations and degree completion rates, as illustrated in the study conducted by Richards (1990). In his report, Richards (1990) observed that nearly half of all student-athletes at the studied institution were motivated to transfer to four-year institution once they completed their academic studies at the community college. Additionally, Lewis and Marcopulos (1989) noted that 25% of the student-athletes enrolled at a single community college during the 1983-1984 academic year completed an associate degree within five years, and 81 percent had completed at least 30 credit hours with GPAs averaging between 2.54 and 2.61 during the same time period.

Summary of Literature Review

I began this chapter with definitions of key terms and concepts, and then discussed the impact of individual and institutional characteristics on students' academic success at the community college. I then provided an overview of the literature pertaining to the academic behaviors and collegiate experiences of student-athletes at the community college, with special attention given to student-athletes' individual characteristics (i.e., demographic, academic performance). Additionally, I discussed the benefit of athletics to individuals and institutions,

student support services to student-athletes, and some of the academic and athletic motivational factors contributing to the success of student-athletes at the community college.

In sum, the literature suggests that the combination of national athletic association academic eligibility requirements, academic support services, the community college environment, and the academic motivation and encouragement provided by peers, coaches, faculty, and staff members serve as *warming* agents to student's increased educational goal aspirations and goal attainment. All of the above factors, individually and in aggregate, cultivate the accumulation of student-athletes' human capital through providing access to higher education, opportunities to complete a degree, increase job-related skills necessary to enter the work place, and provide the academic foundation for student-athletes to continue their academic studies at a four-year institution.

Studies highlighted in this review utilized a number of frameworks and models to examine the retention, persistence, transfer, and degree attainment of students and student-athletes at the community college. For example, researchers utilized academic and social integration frameworks (Bailey, Calcagno, Jenkins, Leinbach, & Kienzl, 2006; Dougherty & Kienzl, 2006; Sawyer, 1993; Carr, Kangas, & Anderson, 1992), production function frameworks (Bailey, Calcagno, Jenkins, Kienzl, & Leinbach, 2005), and status attainment and undergraduate socialization models (Druehl, 1992; Laanan, 2003) in order to explain differences found in GPA, degree completion, retention and transfer rates within and between student populations at the community college.

A prevalent explanation for the successes and/or failures of college students in the literature has been grounded in both social and academic integration/involvement theories and models. Social and academic integration models and theories suggest that there are

intermediating factors experienced at the institutional level which translate institutional policies and practices into student achievement or into a quantifiable outcome (Astin, 1999). These theories and models further postulate that the more students are actively involved in their academic studies and their college community and environment, the higher the probability that students will reach a successful academic outcome (e.g., degree completion).

On the other hand, status attainment theories such as those advanced by Blau and Duncan (1967) purport that there are causal relationships between parent's educational and occupational attainment, and the educational and occupational attainment of later generations. These studies focus on the impact of individual's highest level of education achieved on labor market outcomes, and highlight the impact and importance of social class, race, and gender in understanding the distribution of educational credentials among individuals (Zang & Thomas, 2005). In essence, researchers that utilize status attainment theories suggest, that children from higher socio-economic backgrounds have higher education and occupational goals than those from working or lower class families (Laanan, 2003).

Laanan (2003) selected an undergraduate socialization lens to explore the degree aspirations of community college students. The undergraduate socialization model takes into account the influence of family social networks in developing student's future educational and occupational goals. The undergraduate socialization model as used by Laanan (2003) views student's educational goal attainment as a function of their environment and the influence and support provided to students through their given social environment and network.

The above models have approached student outcomes as a function of both their environment and their ties to social networks. Theories provided by economists provide yet another lens in which to view the academic behaviors and outcomes of students at the

community college. In production function models, the value of higher education participation is measured using either input or output methods (Bailey, Calcagno, Jenkins, Kienzl, & Lienbach, 2005; Psacharopoulos, 2006). To illustrate further, Bailey and others (2005) and Laanan and colleagues (2006) describe the maximum output (e.g., degree attainment, higher wages, etc.) that can be expected given the type and volume of inputs invested (i.e., higher education experience, level of education achieved, number and type of degree earned). Input methods also consider resources committed by families, students, and others, on behalf of individuals (e.g., institutional scholarships, athletically-related financial aid, support services) as investment in human capital mean while, the output method considers the value of additional educational attainment, such as higher standard of living or greater purchasing power (Psacharopoulos, 2006).

Theoretical Framework

In the present study, I offer a model developed with consideration given to the impact of investments in human capital, by individuals and institutions, as the primary stimulus for student-athletes' academic success. The basic premise of human capital theory entails the effect of investments in activities on building capital -- assets or goods that generate income -- for future benefit (Psacharopoulos, 2006). Human capital theory views increase in intellectual capacity and job-related skills acquired through additional years of formal education or training programs as capital -- capital which facilitates one's increased future income, or increases other assets used to foster upward social and economic mobility (Becker, 1993; Blaug, 1976; Graf, 2006).

Economist Theodore Schultz first introduced the idea of human capital to the literature in 1960, but this idea was later advanced by Becker in his 1964 work entitled *Human Capital*. In Becker's (1964) original examination of human capital he focused primarily on the economic return increased education yields over an individual's lifetime, compared to individuals that

choose not to invest in higher education or specialized job training. According to Becker (1964), the value, or internal rate of return, to costs associated with participation in higher education or other training opportunities is quantified in the net difference between investment costs (i.e., forgone earning, expenses for tuition, books, and other supplies) and future gains in income (Becker, 1964; Lleras, 2004). A byproduct of an investment in education and training, in addition to increased wages, is the accumulation of certain skills which have the propensity to enhance productivity and increase educational credentials, which convey a certain level of competency for productivity to future employers (Becker, 1964; Carnevale & Desrochers, 2001; Lleras, 2004).

Within the context of human capital theory, several studies have documented the role of community colleges in developing capital (Laanan, Hardy, & Katsinas, 2006). As mentioned previously, the accumulation of capital (i.e., skills development, increased knowledge, higher future earning potential) at the community college is realized through job-training, certificate or associate degree attainment, and through the academic preparation provided by community colleges necessary to facilitate continuation of their academic studies at a four-year institution (Ehrenberg & Smith, 2004; Grubb, 2002; Kane & Rouse, 1995, 1999; Leigh & Gill, 2003; Rouse, 1995). Cohen and Brawer wrote: “[community colleges] maintain open channels for individuals, enhancing the social mobility that has characterized America; and they accept the idea that society can be better, just as individuals can better their lot within it” (1996, p.37). A review of recent literature provides illustration of the positive earnings effect from community college attendance (Marcotte, Bailey, Borkoski, & Kienzl, 2005). Goldhaber and Peri (2007) suggested that the community college has the propensity to increase individual’s yearly earnings above that of individuals that do not attend college or earn a college degree. Brint (2003), using

the National Longitudinal Study of High School Class of 1972 and the National Longitudinal Study of Youth data bases, found that associate's degree recipients have a higher rate of return on their investment than individuals that attend a four-year institution but never complete a degree. Baum and Ma (2007) suggested that community college students who earn a degree within two years after high school graduation have total salary earnings, net educational expenditures, which exceed total earnings for individuals that enter the workforce with only a high school diploma. Baum and Ma's (2007) study suggest that students with a degree from a community college will earn more annually than their peers who have a high diploma after nine years of full-time work, even when considering the financial debt associated with attending a community college for two years.

Additionally, several other studies have explored the economic return of community college attendance through analysis of wage and employment data via national and state data sets (e.g., Azari, 1996; Laanan, Hardy, & Katsinas, 2006; Marcotte, Bailey, Borkoski, Kienzl, 2005). However, the present study views institutions and states' investment (i.e., access to higher education through athletic recruitment and the award of athletically-related financial aid) in student-athletes' professional and academic future as a form of human capital. The desired and ultimate product of institutions and states' investment in student-athletes being the successful completion of course credits enrolled at the community college, degree attainment and/or four-year transfer.

Based on the literature reviewed for this study, the conclusion can be made that the investment of resources (i.e., athletically-related financial aid, student services support) by institutions and states have an impact on the success of student-athletes at the community college, as measured by retention, degree completion, and four-year transfer. More specifically,

the reviewed studies posit that student-athletes are more likely to graduate and/or transfer to four-year institutions from the community college than non-athlete students because of the investments made by institutions toward student-athletes' academic studies via monetary and human resources. Using a human capital lens, I explored these assumptions using state-wide data from the Florida Department of Education's PK-20 Data Warehouse. Specifically, I explored the following two questions:

1. To what extent do academic performance (i.e., GPA, credit hours enrolled, credit hours earned), degree attainment, and four-year transfer rates differ between full-time first-time (FTFT) enrolled student-athletes and their peers at the community college?
2. What effect do individual, pre-college, and institutional characteristics have on the academic performance, degree attainment, and four-year transfer rates for student-athletes, compared to their non-athlete peers?

Conceptual Model

There are several theoretical frameworks and conceptual models provided in the literature that are helpful to better understanding the academic performance of community college student-athletes and differences found between the performance of athletes and non-athlete students. Accordingly, many of the framework and models that have been discussed throughout the preceding pages were used to develop the conceptual model for this study, as well as provided guidance in the selection of a theoretical lens in which to best view the academic performance of student-athletes at the community college and conduct the statistical analyses. Specifically, the presented model was inspired, in part, by the work of Dougherty and Kienzl (2006). Dougherty and Kienzl (2006) examined the impact of four sets of independent variables on the likelihood of four-year transfer for a sample of community college students. The variables in Dougherty and

Kienzl's (2006) model included: 1) social background (SES, race-ethnicity, gender, age); 2) other precollege personal characteristics (academic preparation in high school, educational and occupational aspirations); 3) external demands (marital and parental status, extent and intensity of work); and 4) experiences during college (enrollment status, major, academic and social integration). The conceptual model for this study has been augmented to include athletic participation, in addition to student's individual background characteristics, pre-college characteristics, academic performance, and institutional characteristics, on the impact of the accumulation of student-athletes' human capital (i.e., degree attainment, four-year transfer) (see [Figure 2-1](#)).

Recent studies highlighted in the literature review have evidenced of the impact of student and institutional characteristics on the likelihood that students will complete four-year transfer or earn a degree at the community college. In addition to the literature on the impact of individual and institutional characteristics on student outcomes, the literature on human capital theory argue that investments in higher education provide a net positive return on individuals, institutions, and state financial investments. Within this context, it is appropriate to view student participation in athletics and the award of athletically-related financial aid as an investment in the educational and professional future of community college student-athletes.

The literature supports the appropriateness of a human capital lens as a way in which to view the success of student-athletes at the community college. To begin, Boulard (2008) proposed that athletics provide an opportunity for diverse groups of individuals to attend college, many of whom would not have considered college at all were it not for the opportunity to participate in athletics. Schulz (2007) and Berson (1996) attributed student's college attendance and persistence to participation in athletics and other complementary factors such as full-time

enrollment requirements. Cigliano (2006) asserted that mentoring provided by coaches, as well as the academic and personal assistance provided to student-athletes by faculty and staff members were most beneficial to student's academic success and progress toward degree attainment.

The following sections will discuss in more detail the dependent variables, and the blocks of individual and institutional variables which make up the conceptual model utilized to explore the impact of individual and institutional characteristics on student-athletes' accumulation of human capital at the community college.

Dependent Variable

The dependent variable, accumulation of human capital, is captured in three proxy binary variables. Each proxy dependent variable was "dummy-coded" (0/1) to represent degree attainment, four-year transfer, and student's completion of a degree and four-year transfer. In the utilized model, human capital accumulation is viewed as a product of athletic participation and the interaction of institutional and individual student characteristics. When examining community college outcomes, several studies have utilized either degree attainment or transfer as the student dependent outcome (Dougherty & Kienzl, 2006; Hagedorn & Lester, 2006; McCormick & Carroll, 1997; Romano & Wisniewski, 2003). In order to capture a broader range of paths travelled by community college students, this study widened the scope of analysis to include all certificates and degrees earned by students at the community college.

Individual Background Characteristics

Student individual background characteristics have been incorporated into virtually every study on persistence and degree attainment within the field of higher education. The evidence provided in many of these studies is clear that White and Asian students from higher SES backgrounds perform better academically, than students from lower SES backgrounds and

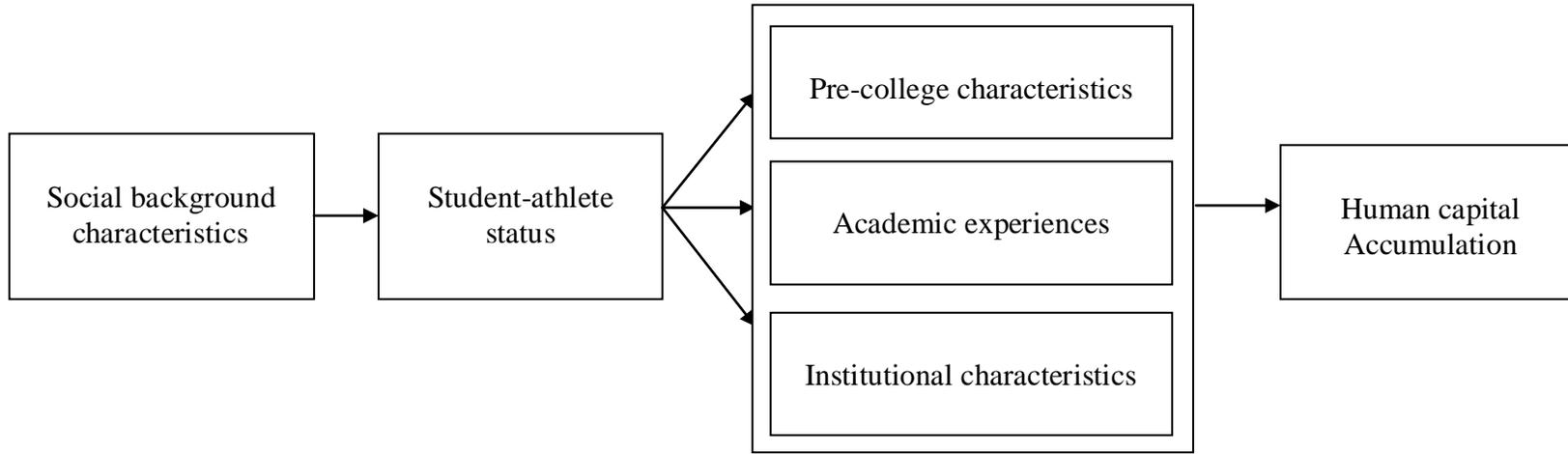


Figure 2-1 Conceptual model for a comparative study of the persistence and academic success of Florida community college student-athletes and non-athlete students: 2004 to 2007.

Students of color (Dougherty & Kienzl, 2006; Flowers, 2006; Horn, 1996; Horn & Premo, 1995; Laanan, 2003). Additionally, studies conducted by Bailey, Calcagno, Jenkins, Leinbach, and Kienzl (2006) and Laanan (2003) have suggested that gender also plays a significant role in student's academic performance and degree attainment at the community college. Bailey and colleagues (2006) suggested that female students out-perform male students, and that female students also have an increased probability of completing a degree at the community college compared to their male peers.

These findings suggest that perhaps student characteristics such as race, gender, and SES status exert a considerable influence on student goal attainment. Therefore, student's social background is an important aspect to consider in the discussion of student outcomes at the community college. Within the scope and limitations of this study and the utilized data, students' individual background characteristics were restricted to students' race, gender and SES status.

Student-Athlete Status

The impact of athletic participation at the community college is the primary focus of this empirical study. The higher education literature is replete with examples regarding the impact of athletic participation on student's academic outcomes at four-year institutions, but little evidence of the impact of athletic participation at the community college is available. The institutional study conducted by Palomar College (2002) and other studies that have been highlighted herein provide further insight into the academic experiences of student-athletes. Palomar Colleges' report revealed that student-athletes earned more associate's degrees, had higher five-year retention rates, and completed academic programs in less time than students in the general student population. When considering gender, Kanter and Lewis (1991) asserted that female athletes earned higher GPAs and completed more credit hours than male students and student-athletes. In the study conducted by Berson (1996), student-athletes were found to have attributed

their continuation in college to participation in athletics and full-time attendance requirements. Lastly, Cigliano (2006) suggested athletic participation at the community college is a source of guidance in student-athletes' educational and professional goal planning.

On the contrary, Kanter and Lewis (1991) suggested that student-athletes are less successful academically than students in the general student population. Kanter and Lewis (1991) found that student-athletes earned slightly lower GPAs and completed fewer transfer units per year than students in the general student population. Additionally, Schulz (2007) found that female athletes were more motivated than male athletes, and White athletes more motivated than Student-athletes of color. Based on the findings from these, the presented model takes into account sport participation when examining outcomes at the community college.

Pre-College Characteristics

In addition to student's social background characteristics, pre-college characteristics were included in the model for this study. The group of pre-college characteristics incorporate variables which include number of years between high school and college entrance, entrance exam scores (ACT, SAT, CPT), high school GPA, and the content areas and number of content areas remediation is needed (i.e., math, reading, writing). Specifically, entrance exam scores (ACT, SAT, CPT) were used as proxies to quantify student's level of college readiness.

The utilization of pre-college characteristics in the model provides further insight into the factors that support or impede students' academic performance at the community college. Accordingly, scholars have long considered academic readiness as a significant factor in predicting student success. Roueche and Baker (1987) wrote over two decades ago about the over-representation of underprepared students at the community college, and the impact of academic under-preparedness on student success in higher education. Roueche and Baker (1987) wrote in their book titled *Access and Excellence*, "The diversity among community college

students is accompanied, for the most part, by academic achievement scores skewed toward the lower levels” (p. iii). They continued by saying, “From this situation arises a question all too familiar to those who work in community colleges: Can both access and high academic standards be achieved?” (p. iii). Roueche and Baker (1987) concluded that “findings clearly support the contention that open access can be maintained and excellence achieved at the same time” (p. iv). Since that time, scholars have continued to explore the impact of academic readiness and time to college on student outcomes at the community college.

Academic Experiences

In addition to academic readiness, the academic experiences of students in college (i.e., GPA, course credits enrolled, course credits earned) have a substantial impact on their persistence to degree attainment or transfer (Cabrera, Burkum, LaNasa, 2005; Peng, Lee, & Ingersoll, 2002). Scholars further suggest that gender and enrollment status (full-time/part-time) also play a significant role in predicting student’s academic performance and degree completion at the community college (Bailey, Calcagno, Jenkins, Leinbach, & Kienzl, 2006; Laanan, 2003). From the examples provided in the literature, this study was restricted to students who were FTFT enrolled, and built-in community college GPA, number of course credits enrolled and earned into the presented model to document the academic experiences of students at the community college.

Institutional Characteristics

The impact of institutional enrollment size and geographic locale are also factors that have been examined in much of the literature on student success. Several researchers have found that rural institutions with small FTE enrollment sizes are more conducive to higher student success rates than large urban or large suburban institutions (Astin, 1993; Pascarella & Terenzini, 1991). Bailey, Calcagno, Jenkins, Kienzl, and Leinbach (2005) found that students

who attended institutions with enrollment sizes less than 1,000 FTEs were more likely to have a successful outcome than students attending institutions with higher FTE enrollments.

Accordingly, variables for institutional enrollment size (i.e., small, medium, large, and very large) and geographic locale (i.e., suburban, urban, and rural) have been included in the model of this study. Providing institutional characteristics in the model allows for exploration of the interaction of the preceding factors and institutional characteristics on student success.

The present study takes into account all of the above variables when exploring the various paths in which students and student-athletes travel toward degree completion and four-year transfer. The expectation and intent is that the included independent variables will provide a comprehensive picture of student-athletes' academic performance and subsequent academic outcomes at the community college. The results and findings from the present empirical study will be valuable to answering the presented research questions and other pressing questions regarding student-athletes at the community college.

CHAPTER 3 METHODOLOGY

The purpose of this empirical study was to examine the influence of athletic participation at the community college on the academic outcomes of FTFT enrolled students. A longitudinal multivariate methodology was employed to analyze student level record data, with special emphasis on transfer and degree completion rates for student-athletes. Degree completion and four-year transfer rates were examined for all FTFT enrolled student-athletes with no restrictions to student's academic intentions or degree aspirations. An analysis of both student level and institutional level data were conducted to answer the following research questions:

1. To what extent do academic performance (i.e., GPA, credit hours enrolled, credit hours earned), degree attainment, and four-year transfer rates differ between full-time first-time (FTFT) enrolled student-athletes and their peers at the community college;
2. What effect do individual, pre-college, and institutional characteristics have on the academic performance, degree attainment, and four-year transfer rates for student-athletes, compared to their non-athlete peers?

Answers to the presented research questions will be pursued through analysis of student level data from the Florida Department of Education's PK-20 Data Warehouse and institutional data from IPEDS. The subsequent findings are intended to provide supply a better understanding of current trends in the academic performance, degree completion, and transfer rates of student-athletes attending Florida community colleges. In addition to the above research questions, two research hypotheses are proposed.

Proposed Hypotheses

As previously stated, there is limited literature available on the academic performance, degree completion, and four-year transfer rates of community college student-athletes. Furthermore, the scant literature on student-athletes at community colleges provide conflicting findings in regards to the influence of athletic participation on student outcomes. For example, institutional case studies provide evidence that student-athletes have higher GPAs, earn more credit hours per semester, earn more degrees, and complete four-year transfer more often than non-athlete students (Lewis & Marcopulos, 1989; Palomar College, 2002). However, multi-institutional studies suggest that student-athletes lag behind their peers in academic performance, number of degrees earned, and in the number of successful four-year transfer that are completed (Carr, Kangas, & Anderson, 1992; Kanter & Lewis, 1991). Based on the contradictory results found in the literature on the influence of athletic participation at the community college the following null-hypotheses are proposed:

Hypothesis 1: There are no differences in academic performance, degree attainment, and four-year transfer rates for FTFT enrolled student-athletes and non-athlete students.

Hypothesis 2: Individual, pre-college, and institutional characteristics equally effect student-athletes and non-athlete students at the community college, thus there are no differences in the academic performance, degree completion, or four-year transfer rates between groups.

I begin this chapter by presenting the research questions and associated hypotheses that will guide this exploration. I will then discuss the data sources and the rationale for selecting and using secondary data, and provide a description of the groups of dependent and independent variables that have been incorporated into this study. Next, I provide a brief summary of the quantitative analytic methods that were used. Chapter Three concludes with a discussion of the limitations and delimitations of the study.

Rationale and Benefits of Secondary Data Sources

Secondary data for this study were provided by the Florida Department of Education's PK-20 Education Data Warehouse (EDW) and Community College and Technical Center MIS (CCTCMIS). The initial application to the Florida Department of Education for data, in part, included a request for student demographic characteristics, pre-entry test scores, transcript data (from community colleges and four-year institutions), and type and amount of financial aid awarded to all FTFT enrolled students during the 2004-2005 academic year. Data provided by the state of Florida were used in aggregate, as well as utilized to create new variables that were desired for this analysis, but not available in the data set provided by the state.

Institutional level data from the Integrated Postsecondary Education Data System (IPEDS) were also incorporated into the data set for this study. Since 1993, the National Center for Education Statistics (NCES) has collected data on institutions, and students attending institutions, that participate in federal student financial aid assistance programs via annual IPEDS surveys (NCES, "IPEDS History"). IPEDS collect primary data for all postsecondary education institutions that receive federal funds and serves as the primary data collection program for NCES. For the purpose of this study, data made available in the 2005 IPEDS survey pertaining to Florida community colleges (i.e., geographic location and enrollment size) were incorporated.

Secondary longitudinal data were utilized from the FLDOE in order to provide a more complete picture of the community college student-athlete population in the state of Florida. Under the direction of the department of education, the EDW and CCTC extract and collect longitudinal student-level data from multiple educational sources and institutions. Accordingly, the EDW is considered one of the most extensive education data warehouses in the nation (Hansen, 2006). Since the 1995-1996 academic year, the EDW and CCTCMIS has served as the

single repository of student-level data for students attending public secondary schools, community colleges, career and technical education institutions, adult education, and four-year institutions in the state university system (Hansen). Florida is one of 16 states (Arkansas, Delaware, Florida, Georgia, Hawaii, Kentucky, Louisiana, Mississippi, New Mexico, Ohio, Rhode Island, South Carolina, Tennessee, Utah, West Virginia, and Wyoming) in the U.S. with an educational data warehouse that collects K-12 student data, and 1 of 6 states (Arkansas, Georgia, Louisiana, Ohio, and Tennessee) with a system that allows for student-level data collection and student tracking across secondary and post-secondary institutions (Hansen, 2006).

The ability to analyze individual transcript data for student-athletes who attended a public community college in the state is a great benefit of using data collected by EDW and CCTCMIS in this study. Other available national data sources (e.g., Beginning Postsecondary Students Longitudinal Study [BPS], High School and Beyond [HS&B], National Postsecondary Student Aid Study [NPSAS]) do not provide comparable access to individual student record data or have the ability to differentiate records based on the award of athletically-related financial aid.

Dependent Variables

The dependent variables for this study were the award of an academic degree (professional certificate or associates degree), four-year transfer, and the combination of an academic degree earned and successful completion of four-year transfer. The dichotomous dependent variables utilized in this study were created directly from data provided by the EDW and CCTCMIS. A student who first gained entry to higher education through a publicly controlled community college and earned an academic degree was considered to have reached a successful outcome. Community college students that transferred to a four-year institution and/or earned a degree were also considered to have reached a successful outcome. A maximum of 11 academic semesters (three and one-half years) was used to measure the successful completion of

these student outcomes. The use of multiple binary dependent variables was employed due to limitations in the data. The utilized data source did not provide information to differentiate student degree or transfer goals. Providing a liberal definition of academic success is intended to capture the greatest possible number of outcomes accomplished by community college students and student-athletes (see [Table 3-1](#)).

Table 3-1 Summary of dependent variables

Dependent Variables	Data Source	Variable Type	Scale Range
Earned academic degree (DGCRT)	CCMIS	Dichotomous	0=No, 1= Yes
Four-year transfer (TRANS)	EDW	Dichotomous	0=No, 1=Yes
Earned academic degree * four-year transfer (DGTRANS)	EDW and CCMIS	Dichotomous	0=No, 1=Yes

Independent Variables

The independent variables utilized in this study were provided by the EDW and CCTCMIS and institutional data were acquired from the IPEDS 2005 survey (see [Table 3-2](#)). Independent variables were separated by the following categories as represented in the conceptual model: 1) Student-athlete status, 2) Individual background characteristics, 3) Pre-college characteristics, 4) Academic experiences, and 5) Institutional characteristics.

Student-Athlete Status

The primary focus of this study was the impact of athletic participation on student outcomes at the community college. As stated previously, student participation in athletics was evidenced through the award of athletically-related financial aid. The Florida Department of Education has collected data on the award of athletically-related financial aid since the 2003-2004 academic year. Based on the award of athletically-related financial aid a binary variable for student-athlete status (SA) was created (non-athlete students is the reference group). Student-athletes in the sample represented a total of eight different sports, which included: Basketball, baseball, golf, soccer, softball, swimming/diving, tennis, and volleyball.

Individual Background Characteristics

The basis for the incorporation of specific individual student characteristics (i.e., race, gender, and SES) in this study is provided in the higher education literature. Scholars have suggested that race, gender, enrollment status, and SES have a strong causal relationship to persistence, degree attainment, and four-year transfer. Previously conducted studies have provided evidence that family socio-economic status (SES) is a significant factor in predicting degree aspirations and four-year transfer for community college students (Dougherty & Kienzl, 2006; Laanan, 2003). Scholars further suggest that gender, race, and enrollment status (full-time/part-time) play a significant role in predicting student academic performance and degree completion (Bailey, Calcagno, Jenkins, Leinbach, & Kienzl, 2006; Horn, Peter, & Rooney, 2002; Laanan, 2003). Bailey and colleagues (2006) asserted that female students out-perform male students at the community college, and female students have increased odds of completing a degree compared to their male peers. Horn, Peter, and Rooney (2002) argued students from disadvantaged ethnic/racial backgrounds and those with physical or learning disabilities were statistically less likely to complete college compared to students who were not restricted by such characteristics.

The group of variables for individual characteristics included race (RACE), gender (SEX), and SES status (PELL). Race (RACE) was “dummy-coded” (White = 0 and Students of color (SOC) = 1) due to a low representation of student-athletes from Asian or Pacific Islander (1.1%), Hispanic (6.4%), and American Indian (0.2%) racial/ethnic groups. White students comprised a majority of students in the non-athlete and student-athlete samples. White students comprised 59.2% (n = 8646) of the non-athlete student sample and 61.7% (n = 345) of student-athlete sample. Students with missing data for race/ethnicity were excluded from analysis. A total of 311

(2.1%) non-athlete students and nine (1.6%) student-athletes had missing or non-reported data for race/ethnicity.

Table 3-2 Summary of independent variables and values

Variables	Values
STUDENT-ATHLETE STATUS	0= Non-athlete Student [*] , 1= Student-athlete
INDIVIDUAL BACKGROUND CHARACTERISTICS	
Gender (SEX)	0= Male [*] , 1= Female
Race (RACE)	0= White [*] , 1= Students of color
Socio-economic status (PELL)	0 = No [*] , 1 = Yes
PRE-COLLEGE CHARACTERISTICS	
Time to college (DELAY)	0 = 1 year or less [*] , 1 = other
Remediation content areas (REMD)	0= None, 1= 1 of 3, 2= 2 of 3, 3 = 3 of 3
Math	0= College ready [*] , 1= Not college ready
Reading	0= College ready [*] , 1= Not college ready
Writing	0= College ready [*] , 1= Not college ready
ACADEMIC EXPERIENCES	
Community college GPA (CCGPA)	Continuous variable (range 0.01-4.00)
Credit hours enrolled per semester (MCRL)	Continuous variable (range 1.00 – 42.00)
Credit hours earned per semester (MCRE)	Continuous variable (range 0 – 23.00)
INSTITUTIONAL CHARACTERISTICS	
Geographic location (GEOLOC)	1=Suburban [*] , 2=Urban, and 3=Rural
Urban	1= Urban, 0= other
Rural	1= Rural, 0= other
FTE Enrollment size (ESIZE)	1= Small; 2= Medium; 3= Large; and 4= Very large [*]
Small	1= Small (500-1,999), 0= other
Medium	1= Medium (2,000 - 4,999), 0= other
Large	1= Large (5,000 - 9,999), 0= other

^{*}Denotes reference group

The variable for gender was “dummy-coded,” with males serving as the reference group. Gender was reported for a total of 15,457 students (non-athlete and student-athletes combined). A total of 21 (0.1%) non-athlete students and three (0.5%) student-athletes were excluded due to missing or non-reported data for gender. Overall, female students had the highest representation across student-athlete and non-athlete samples. Female students comprised 61% (n= 9087) of the non-athlete student sample and 56.1% (n= 317) of the student-athlete sample.

To understand the influence of SES on student outcomes at the community college a proxy variable was created based on the receipt of a Pell Grant. Pell Grants are need-based financial awards given to students from low-income backgrounds attending public colleges and universities in the U.S. For classification purposes, Pell Grant recipients were classified as low SES and all other students as high SES. Approximately 68% of all students in both samples were classified as low SES. Approximately, 69 % (10,307) of non-athlete students and 36% (207) of student-athletes in this study were considered low SES.

Pre-College Characteristics

The group of pre-college variables includes academically-related characteristics such as time to college (DELAY), and readiness for college level courses in math, reading, and writing (COLPREP). Since prospective students are not required to submit ACT or SAT scores to enroll in courses at the community college, some cases in the data set had missing data for ACT and SAT scores. However, students who enroll at the community college must sit for the College Placement Test (CPT), if they do not have an ACT or SAT score, to determine their academic proficiency in the content areas math, reading and writing. The variable COLPREP was constructed from data provided by the FLDOE and recoded using a multiple step process. First, student scores for the ACT were converted to SAT scores using the “ACT/SAT Conversion Table” provided by *The Princeton Review* (n.d.). Next, student scores from the CPT were converted to SAT scores using the Florida Department of Education “Remedial Cutoff Score table (Florida Department of Education, 2005). The “Remedial Cutoff Score Table” was used to determine student’s academic readiness for college level math, reading, and writing. In Florida, students are placed in either remediation or college level courses based on their presented entrance exam scores. Students who score above 440 on the SAT verbal and math sections are permitted to take college level credit courses at the community college. Students that fail to meet

these minimum requirements must successfully complete a prescribed set of remedial courses before moving on to college level courses.

The categorical variable, college readiness (COLPREP), was created to indicate the number of content areas remediation was needed for students in the sample. Binary variables were then recoded for each content area (0= no remediation, 1= remediation required) from the college readiness variable. Thirty-five percent (n= 5,361) of non-athlete students and 38.2% (n= 217) of student-athletes were not required to complete remedial courses prior to enrolling in college level courses at the community college. Overall, 26% (n= 4,065) of all students were deficient in at least one content area, 18.6% (n= 2,886) required remediation in two content areas, and 19.1% (n= 2,952) required remediation in all three content areas.

The variable DELAY was incorporated into the group of pre-entry characteristics to capture the impact of time elapsed between high school completion and college entrance on student outcomes. The binary variable DELAY was coded as “0” to identify students that entered college within one year or less of receipt of a high school diploma and “1” to indicate students that waited more than one year to enroll in college after high school. Based on previous literature, and within the limitations of the utilized data set, the above pre-college student characteristics were included in this study.

The impact of college preparedness and time between high school completion and college entrance has been examined by researchers over the past decade (Roueche & Baker, 1987). Given the fact that a majority of community colleges allow students access, regardless of previous academic record or entrance exam scores (Provasnik and Planty, 2008), the academic performance of less-prepared students is an important aspect to consider in this analysis. The level of college readiness of students is especially important when considering the academic

performance of athletes at the community college. Hall (2007) suggested that student-athletes at community colleges are at-risk students because they are generally less likely to complete an associate degree or certificate and more inclined to perform lower academically than their non-athlete peers. Researchers have also found that student-athletes are often unprepared for college work and required to enroll in remedial or developmental courses prior to enrolling in courses for college credits (Hobneck, Mudge, & Turchi, 2003). Scholars have suggested that students who delay entry to college do not perform at the same caliber of students that immediately enroll in college immediately following receipt of a high school diploma. Horn, Peter, and Rooney (2002) suggested that students who enroll in college within a year of high school graduation are more likely to earn a degree at the community college, compared to those that delay entry.

Academic Experiences

The academic experiences of community college students were measured using three continuous variables. First, a continuous variable was created to capture students overall community college GPA. This variable was calculated using transcript data provided by the Florida Department of Education. In order to calculate the overall GPA for students in the sample, the total grade points earned by each student was divided by the total number of credit hours they received credit for, based on their transcript records.

Continuous variables for the mean credit hours enrolled (MCREN) and mean credit hours earned per semester (MCREA) were also created. To calculate mean credit hours earned and credit hours enrolled for students in the sample, the total number of semesters each student was enrolled at the community college was calculated for each student. The total credit hours enrolled and earned for each student was then divided by the total number of semesters the student had enrolled to obtain a mean average.

The academic experiences of students are important factors to consider when exploring degree attainment and four-year transfer rates for students at the community college. As mentioned in the review of the literature for this study, researchers have attributed enrollment status and the number of course credits enrolled per semester when examining the probability of a student reaching a successful outcome (Cabrera, Burkum, LaNasa, 2005; Horn, Peter, & Rooney, 2002). Accordingly, the present study gives consideration to the impact of course credits enrolled and credit hours earned on degree attainment and four-year transfer for students at the community college.

Institutional Characteristics

The higher education literature speaks at length about the impact of institutional enrollment size and location on student success at the community college. Recent studies have found that students attending institutions with smaller enrollment sizes are more likely to have a successful outcome than students attending institutions with larger FTE enrollments (Astin, 1993; Bailey, Calcagno, Jenkins, Kienzl, & Leinbach, 2005; Pascarella & Terenzini, 1991; 2005). Including institutional characteristics in the model for this study allows for the exploration of both individual background factors and institutional characteristics on success of student-athletes at the community college.

Institutional data were obtained from the 2005 IPEDS survey. A categorical variable was created for geographic location (GEOLOC) to examine the impact of geographic locale on the outcomes of student-athletes at the community college. Variables representing geographic locale were categorized as follows: 1=Suburban, 2=Urban, and 3=Rural. Each geographic location indicator was then “dummy-coded” to create two separate binary variables (i.e., Urban = 1, other = 0; Rural = 1, other = 0). The variable for suburban was excluded from the logistic regression equations as it served as the reference group.

Institutional FTE enrollment size provides another index in which to examine the effect of institutional characteristics on the academic success of student-athletes at the community college. The variable for FTE Enrollment size (ESIZE) encompassed the following values: 1= Small (500 - 1,999); 2= Medium (2,000 - 4,999); 3= Large (5,000 - 9,999); and 4= Very Large (at least 10,000). The variable for institutional FTE enrollment size was “dummy-coded” to create three separate binary variables (i.e., Small =1, others =0; Medium =1, others =0; and Very large =1, others =0). A dummy-variable for large institutions was not created since large institutions served as the reference group in the logistic regression equations.

The Florida Community College System is comprised of a total of 28 publically controlled institutions. However, institutions included in this study were limited to institutions in the state that sponsored athletic programs during the 2004-2005 academic year. Due to the above criteria, Edison State College, Florida Keys Community College, and Valencia Community College and students who first matriculated at these institutions were excluded from this study. Five additional community colleges (Lake Sumter, Miami-Dade, Okaloosa-Walton, St. Petersburg, and South Florida) and students attending these institutions were also excluded from this study due to no representation of student-athletes at these institutions in the provided data set. Lake Sumter, Miami-Dade, Okaloosa-Walton, St. Petersburg, and South Florida each sponsored athletic programs during the 2004-2005 academic year, but student-athletes from these institutions were not represented in the data set provided by the FLDOE. No explanation is currently available for exclusion of data for student-athletes at these institutions in the data sample.

Twenty percent (n= 4) of the institutions in this study are classified as rural. The Integrated Postsecondary Education Data System (IPEDS) distinguishes institutions located in

rural areas into three categories: fringe, distant, and remote. Rural institutions, per IPEDS definition, include institutions that are located in areas that can be classified as: 1) Less than or equal to five miles from an urbanized area, as well as rural territories that are less than or equal to 2.5 miles from an urban cluster (fringe); 2) more than five miles but less than or equal to 25 miles from an urbanized area, as well as rural territories that are more than 2.5 miles but less than or equal to 10 miles from an urban cluster (distant); or 3) more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster (remote).

Twenty-five percent (n= 5) of the remaining institutions are classified as suburban and 55% (n= 11) as urban. Per IPEDS definition, suburban institutions are those institutions that are located in territories outside a principal city and inside an urbanized area with: 1) a population of 250,000 or more (large); 2) a population less than 250,000 and greater than or equal to 100,000 (midsize); or 3) a population less than 100,000 (small). Urban institutions are institutions located in territories that are classified as inside an urbanized area and inside a principal city with: 1) a total population of 250,000 or more (large); 2) a population less than 250,000 and greater than or equal to 100,000 (midsize); or 3) a population less than 100,000 (small).

Using 2005 IPEDS survey data, institutions in the sample were delineated by FTE enrollment size into the following categories: 1) small, 2) medium, 3) large, and 4) large. Small institutions were those with FTE enrollment sizes between 500 and 1,999, medium institutions with enrollments between 2,000 and 4,999, large between 5,000 and 9,999, and very large institutions were those with at least 10,000 FTEs. Institutions with medium (2,000-4,999) and very large (at least 10,000) enrollments comprised 75% of all institutions included in the sample. Specifically, 50% of the institutional sample had an FTE enrollment size of 10,000 or more and 25% had an FTE enrollment size between 2,000 and 4,999.

Analytic Methods

Data analysis for this study was conducted in two stages: preliminary and advanced analysis. The preliminary analysis stage included descriptive analysis, *t*-tests and analysis of variance (ANOVA) for student level and institutional level data. The advanced stage included three multivariate logistic regressions, which utilized degree completion, four-year transfer, and degree attainment and transfer as the binary dependent variables. Preliminary analyses were used to compare student-athletes to non-athlete students on two of the three continuous independent variables that have been discussed. Eight *t*-tests were conducted to compare students on community college GPA (CCGPA) and mean course credit hours earned (MCRE), with respect to athletic status, race, gender, and socio-economic status.

ANOVA statistical methods were also utilized in the present study. The purpose of ANOVA analytic methods is to examine whether observed differences between two or more groups represent a chance occurrence or a systematic effect (Shavelson, 1996). ANOVAs were employed to compare GPA and mean course credit hours earned (MCRE) for athlete and non-athlete students. Comparisons between athletes and non-athletes were performed with respect to institutional geographic location (i.e., suburban urban, rural) and FTE enrollment size (i.e., small, medium, large, very large). The utilization of state-wide longitudinal data provided a sufficient sample size for student-athletes and non-athletes to conduct between group comparisons. Furthermore, preliminary findings suggest that data for the studied samples do not violate assumptions for ANOVA procedures (e.g., independence, equal variance or normal distribution) (Gravetter & Wallnau, 2004; Shavelson, 1996).

The data analyses conducted in the advanced stage of this study included three logistic regressions. Logistic regression methods were utilized to explore the impact of multiple student and institutional factors in predicting student four-year transfer, degree attainment, and the

combination of four-year transfer and degree attainment. The dependent variables under study have been coded as three separate dichotomous variables. Traditionally, in higher education research, logistical regression methods are preferred when conducting studies that incorporate dichotomous dependent variables, such as persistence, transfer, major and degree attainment, and both dichotomous and continuous independent variables (Cabrera, 1994; Hossler, 1991; McArdle & Hamagami, 1994). Logistic regression methods were utilized over other available quantitative statistical methods (e.g., Discriminant Analysis) as these methods are more familiar to researchers in the social science field and results for are easier to interpret compared other available statistical methods (Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996).

Table 3-3 Summary of logistic regression models

Independent variables	Block 0	Block 1	Block 2	Block 3	Block 4
STUDENT-ATHLETE STATUS					
Athletic status (Non-athlete)	X	X	X	X	X
INDIVIDUAL BACKGROUND CHARACTERISTICS					
Gender (Male)	X	X	X	X	X
Race (White)	X	X	X	X	X
SES (High SES)	X	X	X	X	X
PRE-COLLEGE CHARACTERISTICS					
Delayed college entry (1 year or less)		X	X	X	X
Math ready (Math ready)		X	X	X	X
Reading ready (Reading ready)		X	X	X	X
Writing ready (Writing reading)		X	X	X	X
ACADEMIC EXPERIENCES					
GPA			X	X	X
Credit hours earned			X	X	X
INSTITUTIONAL CHARACTERISTICS					
Rural (Suburban)				X	X
Urban (Suburban)				X	X
Small (Very large)					
Medium (Very large)				X	X
Large (Very large)				X	X
INTERACTION TERMS					
Athletic status * Individual characteristics					X
Athletic status * Pre-college characteristics					X
Athletic status * Academic experiences					X

Logistic regressions were conducted to explore the effect of individual and pre-college characteristics, institutional characteristics, athletic participation, and student's academic experiences on student degree attainment, four-year transfer, and the combination of degree attainment and four-year transfer. Independent variables were placed in blocks and added in succession to a baseline model to be regressed against each dependent variable (see [Table 3-3](#)). The baseline model (Block 1) for all logistic regressions that were conducted was: $Y_1 = \beta_0 + \beta_1(\text{SA}) + \beta_2(\text{RACE}) + \beta_3(\text{SEX}) + \beta_4(\text{SES}) + \varepsilon_1$, where Y_1 represents a single dependent variable (four-year transfer, degree attainment, or four-year transfer*degree attainment), β_j the coefficient, and ε_1 the constant or error term.

Limitation of Study

Using data from multiple academic years (2004-2007) made available through the Florida Department of Education's K-20 Educational Data Warehouse (EDW) and Community College and Technical Center MIS (CCTCMIS), this study specifically examined the persistence and academic success of community college student-athletes that were awarded athletically-related financial aid. Data were used to measure student's academic success through community college GPA, credit hours earned, four-year transfer, and degree attainment. Full-time first-time (FTFT) enrolled student-athletes in this study were identified and compared to FTFT non-athlete students at the community college. As with any study that uses secondary data for analysis, this particular dataset has its own limitations. As this study and its analyses relied solely on data collected by institutions and reported to the state of Florida, errors in data collection and extraction by EDW are very likely. Thus, these errors, if any, may have resulted in erroneous results and/or findings.

Secondly, this study is limited somewhat in its generalizability to students and institutions outside the Florida Community College System. Data were analyzed for a designated sample of

institutions and students within the Florida community college system. The institutional sample was limited to 20 institutions in the state that sponsored an intercollegiate athletic program during the 2004-2005 academic year and data were only attainable for student-athletes who received athletically-related financial aid. More specifically, five institutions in the state that sponsored intercollegiate athletic programs were omitted due to a lack of available data regarding the award of athletically-related financial aid. Based on these limitations, data were not collected for ALL student-athletes in the state as the only indicator of a student's participation in athletics is the award of athletically-related financial aid. Students who did not receive athletically-related financial aid, but participated in intercollegiate athletics at the community college, may have been omitted. It must also be noted that some pre- and post-enrollment data for students who graduated from a high school outside of Florida or who transferred to a four-year institution outside the state were not attainable.

Delimitations

Based on these limitations, this study does not claim to provide insight into or represent a national sample of the academic behaviors of all student-athletes at the community college. Any statements included in this study are based solely on the analysis of the academic behaviors of community college student-athletes in Florida. Furthermore, examining the relationship between financial aid and enrollment and persistence is a complicated endeavor (Cellini, 2008; Dowd, 2008; Nora, Barlow, & Crisp, 2006), which involves many variables that are not available or explainable in the present data set. Though made reference to in this work, this study does not claim to discuss or explore the impact of financial aid (e.g., athletically-related, grants, loans or academic scholarships) when examining the persistence and retention of students in Florida. And lastly, this study does not provide any insight into the number of students who were recruited,

provided with athletically-related financial aid, or invited to participate in intercollegiate athletics at the four-year institution. Such data were not available and is outside the scope of this study.

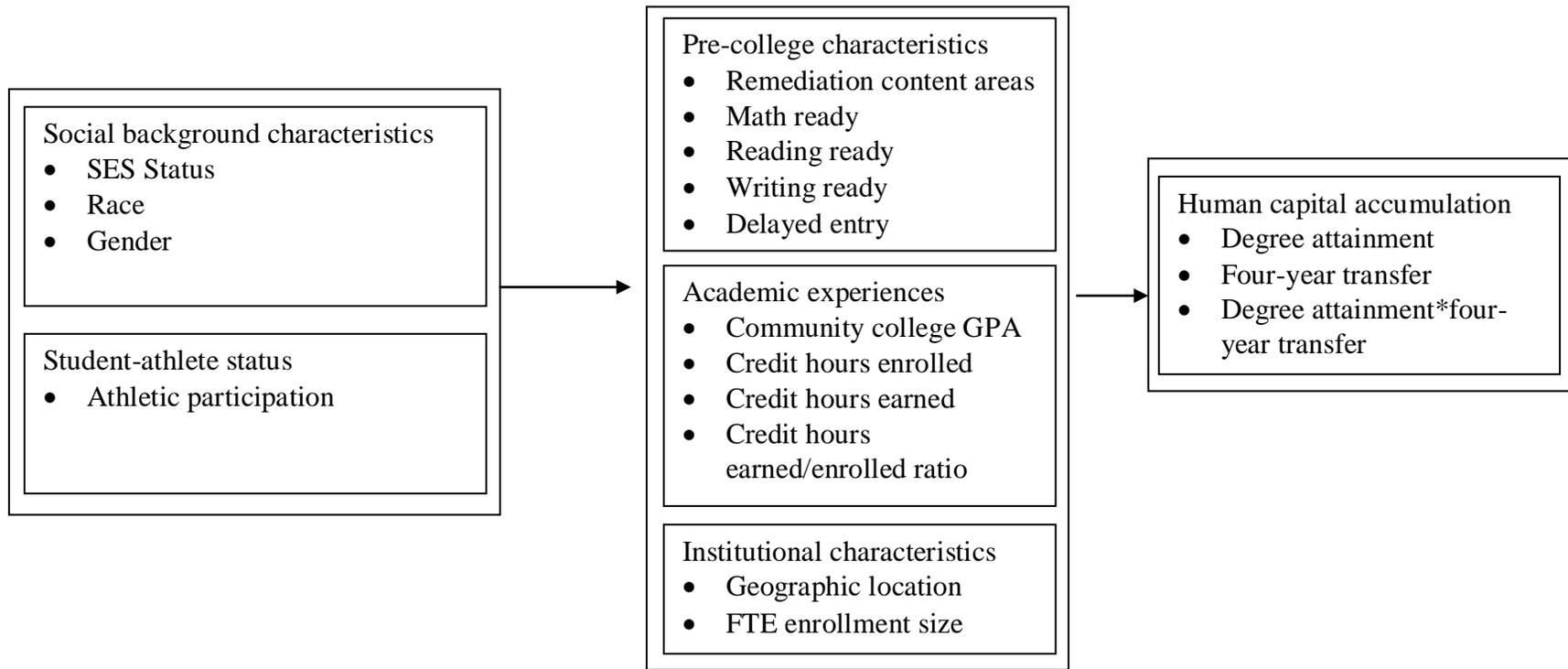


Figure 3-1 Conceptual model for the comparative study of the persistence and academic success of Florida community college student-athletes and non-athlete students: 2004 to 2007.

CHAPTER 4 DATA ANALYSIS AND RESULTS

I begin chapter four with a presentation of results for the descriptive statistics (univariate and bivariate), *t*-tests, analysis of variance (ANOVA), and General Linear Models (GLM) with binary dependent outcome variables. The GLM regression models were constructed using identical blocks of independent variables, which will be further described and discussed in this chapter. The selected independent variables for the regression models were regressed against the dependent variables representing: 1) degree attainment, 2) four-year transfer, and 3) degree attainment and four-year transfer. Chapter Four concludes with a brief summary of noteworthy results from the statistical analyses that were performed.

Preliminary Analysis

The preliminary analysis section of this study will provide a foundation for the advanced statistical methods (multivariate logistic regressions) that were employed. The preliminary analysis section begins with a presentation of results from the descriptive analyses of the institutional sample, including the distribution of the students within each institution. Additionally, this section includes a discussion of the distribution of institutions in the sample by geographic locale, FTE enrollment size, and number of degrees conferred. The preliminary analysis section will be followed by a presentation of results from the descriptive analysis of student level data. Next, results from the conducted *t*-tests and ANOVAs will be presented and discussed. The final portion of the preliminary analysis section will provide results for the descriptive analyses for the three continuous three independent variables (i.e., GPA, mean credit hours enrolled, mean credit hours earned), delineated by student-athlete status.

Descriptive Statistics for Institutional Sample

A total of 14,913 non-athlete students were included in this study, of the students included in the sample, Broward College had the largest percentage of enrolled students with 11.5% (n=1,722), while only 0.6% (n=93) of all non-athlete students in the sample were enrolled at North Florida (see Table 4.1). A total of 568 student-athletes were distributed between the 20 institutions. Indian River Community College had the largest percentage of student-athletes at 9% of the total athlete population. Brevard County Community College had the smallest percentage (2%) of student-athletes enrolled of any institution in the sample.

Table 4-1. Frequency of students nested in institutions

Institutions	Non-Athlete Students		Student-Athletes	
	Frequency	Percent	Frequency	Percent
Brevard	576	3.8	11	1.9
Broward	1,722	11.5	39	6.8
Central Florida	456	3.0	18	3.1
Chipola	209	0.4	19	3.3
Daytona Beach ^a	992	6.6	30	5.2
Florida CC at Jacksonville	1,409	9.4	41	7.2
Gulf Coast	404	2.7	36	6.3
Hillsborough	1,408	9.4	37	6.5
Indian River	454	3.0	51	8.9
Lake City	286	1.9	21	3.6
Manatee	750	5.0	36	6.3
North Florida	93	0.6	18	3.1
Palm Beach	1,082	7.2	23	4.0
Pasco-Hernando	737	4.9	30	5.2
Pensacola	909	6.0	40	7.0
Polk	359	2.4	19	3.3
St. Johns River	391	2.6	35	6.1
Santa Fe	963	6.4	20	3.5
Seminole	889	5.9	28	4.9
Tallahassee	824	5.5	16	2.8
Total	14,913	100%	568	100%

^a Daytona Beach changed their name to Daytona State College in 2008.

Using data provided by the Integrated Postsecondary Education Data System (IPEDS), the frequency of institutions by geographic locale within the state of Florida was explored (see [Table 4-2](#)). Eleven institutions (55%) in the sample were classified as urban, 20% (n= 4) as rural, and the five remaining institutions were categorized as suburban, according to the applied IPEDS definitions.

Table 4-2. Frequency of institutions by geographic location

Geographic location	Frequency	Percentage
Suburban	5	25.0
Urban	11	55.0
Rural	4	20.0

A descriptive analysis of institutions by FTE enrollment size was also conducted using IPEDS data. Combined, institutions with medium (2,000-4,999) and very large (at least 10,000) enrollments comprised 75% of all institutions in the utilized four level FTE enrollment classification system (see [Table 4-3](#)). Specifically, 50% (n = 10) of institutions in the sample had an enrollment size of 10,000 FTE or more, and 25% (n= 5) had an FTE enrollment size between 2,000 and 4,999. Only two institutions (Chipola and North Florida) in the sample had an enrollment size between 200 and 1,999 FTEs.

Table 4-3. Frequency of institutions by FTE enrollment size

Enrollment Size (FTE)	Frequency	Percentage
Small (500 - 1,999)	2	10.0
Medium (2,000 - 4,999)	5	25.0
Large (5,000 - 9,999)	3	15.0
Very large (at least 10,000)	10	50.0

Distribution of Degrees Conferred

This study considered all associate degrees (Associates of Arts, Associates of Science) and professional certificates (Associate of Science Certificate, Vocational Certificate) awarded to students in order to present a more inclusive picture of the degrees earned by students and

student-athletes. Table 4-4 presents the distribution of degrees awarded to student-athletes and non-athlete students prior to the spring 2008 term.

Table 4-4. Distribution of degrees^a conferred by institutions

Institution	Non-Athlete Students		Student-Athletes	
	Count	Percent ^b	Count	Percent ^b
Brevard	158	4.9	5	2.9
Broward	296	9.0	7	4.0
Central Florida	120	3.7	8	4.6
Chipola	64	2.0	7	4.0
Daytona Beach	197	6.0	14	8.0
Florida CC at Jacksonville	309	9.5	12	6.9
Gulf Coast	61	1.9	13	7.4
Hillsborough	163	5.0	10	5.7
Indian River	122	3.8	13	7.4
Lake City	81	2.5	5	2.9
Manatee	124	3.8	14	8.0
North Florida	24	0.7	4	2.3
Palm Beach	212	6.5	6	3.4
Pasco-Hernando	185	5.7	6	3.4
Pensacola	178	5.5	12	6.9
Polk	90	5.0	5	2.9
St. Johns River	75	2.3	6	3.4
Santa Fe	384	11.8	10	5.7
Seminole	224	6.9	10	5.7
Tallahassee	178	5.5	8	4.6

^aDegrees represents Associates of Arts, Associates of Science, Associate of Science Certificate, and Vocational Certificate. ^b Percentages for all institutions may not total 100 percent due to rounding.

A total of 3,245 degrees were awarded to non-athlete students, and 175 awarded to student-athletes during the three and one-half years examined. Santa Fe Community College conferred the most academic awards (n= 384) and North Florida awarded the fewest academic awards (n= 24) to non-athlete students. Daytona Beach and Manatee Community College each conferred a total of 14 degrees to student-athletes, the most academic degrees awarded to athletes. North

Florida conferred the fewest academic credentials to student-athletes. Only 2.3% of all degrees awarded to student-athletes were conferred by North Florida community college.

Descriptive Statistics for Student Samples

Frequencies and crosstabs for the student samples were first conducted with respect to race (White and Students of color), then gender, SES, and level of college readiness. Additional analyses were conducted to explore the frequency of college ready student-athletes and non-athlete students, by race and SES, for the each content area (i.e., math, reading, and writing).

When considering the student samples by race, White students comprised the majority ethnic/racial group for both non-athlete and student-athlete samples. Specifically, 59.2% (n = 8646) of non-athlete students and 61.7% (n = 345) of student-athletes in the sample were White (see [Table 4-5](#)). Students with missing data for race/ethnicity were excluded from this analysis. These exclusions included a total of 311 (2.1%) non-athlete students and nine (1.6%) student-athletes that had missing or non-reported data for race/ethnicity.

Table 4-5. Frequency of students by race

Race	Non-athlete Students		Student-athletes	
	Frequency	Percent	Frequency	Percent
White	8,646	59.2	345	61.7
Students of color ^a	5,956	40.8	214	38.3

^a Students of color represents Black, Hispanic, Asian, and American Indian ethnic/racial backgrounds

Data for gender was reported for a combined total of 15,457 student-athletes and non-athlete students. It must be noted that there were missing data for the variable race. Twenty-one non-athlete students (0.1%) and three (0.5%) student-athletes were excluded from this analysis due to missing or non-reported data for gender. Female students comprised 61% (n=9,087) of the non-athlete student sample and 56.1% (n = 317) of the student-athlete sample (see [Table 4-6](#)).

Table 4-6. Frequency of students by gender

	Non-athlete Students		Student-athletes	
	Frequency	Percent	Frequency	Percent
Male	5,805	39.0	248	43.9
Female	9,087	61.0	317	56.1

As suggested in the review of literature, student background characteristics are an important factor to consider when examining student outcomes at the community college. Accordingly, a descriptive analysis of the student sample by socio-economic status (SES) was conducted to explore the distribution of low and high SES students within each sample. Results from the conducted descriptive analysis suggest that 69% (n = 10,307) of non-athlete students and 36.4% (n = 207) of student-athletes were low SES (see [Table 4-7](#)). Results indicate a proportionally high number of non-athlete students at the community college are low SES compared to student-athletes.

Table 4-7. Frequency of students by SES

Socio-Economic Status (SES)	Non-athlete Students		Student-athletes	
	Frequency	Percent	Frequency	Percent
Low SES	10,307	69.1	207	36.4
High SES	4,606	30.9	361	63.6

Level of College Readiness by Race, Gender, and SES

Some interesting and noteworthy results were found when exploring the college readiness of students in the samples (see [Table 4.8](#)). Less than half of all student-athletes and non-athlete students were considered college ready--not requiring remediation at the community college--in any of the three tested content areas (i.e., math, reading, and writing). Thirty-six percent (n = 5,361) of non-athletes and 38% (n = 217) of student-athletes were found to be college ready in all three content areas. Approximately 18% of non-athlete students required remediation in two of the three content areas, and another 18.8% required remediation in all three areas. Nineteen

percent of student-athletes required remediation in two of the three content areas, and 26% required remediation in all three cognitive areas. Nineteen percent (n = 2,952) of all non-athlete and student-athletes required remediation in all three content areas.

Table 4-8. Frequency of students by college readiness

	Non-Athlete Students		Student-Athletes	
	Frequency	Percent	Frequency	Percent
No remediation needed	5,361	35.9	217	38.2
1 of 3 content areas	3,970	26.6	95	16.7
2 of 3 content areas	2,778	18.6	108	19.0
3 of 3 content areas	2,804	18.8	148	26.1

Next, an analysis of the distribution of students in each level of college readiness was conducted by race, to explore differences and similarities in college readiness for specific sub-groups of students (see [Table 4.9](#)). Forty-nine percent (n=170) of White student-athletes and 45% (n=3,906) of non-athlete White students were found to be college ready in all three content areas. Ten percent of White non-athletes and 14.8% of White student-athletes required remediation in all three content areas. On the other hand, only 22.5% (1,342) of non-athlete Students of color and 20.6% of Student-athletes of color were college ready in all three content areas. Thirty-eight percent (n = 1832) of non-athlete Students of color and 45.3% (n= 97) of Student-athletes of color required remediation in all three content areas.

Table 4-9. Frequency of college ready students by race

# of Content areas	Non-Athlete Students(n=14,602)		Student-Athletes (n=559)	
	White Count (%)	Students of color Count (%)	White Count (%)	Students of color Count (%)
None	3,906 (45.2)	1,342 (22.5)	170 (49.3)	44 (20.6)
1 of 3	2,573 (29.8)	1,322 (22.2)	67 (19.4)	26 (12.1)
2 of 3	1,250 (14.5)	1,460 (24.5)	57 (16.5)	47 (22.0)
3 of 3	917 (10.6)	1832 (30.8)	51 (14.8)	97 (45.3)

The following section presents results from the analyses conducted for student’s level of college readiness by gender and socio-economic status. [Table 4-10](#) illustrates student’s level of college readiness by gender and [Table 4-11](#) provides results for the distribution of students in each level of college readiness by SES. It was found that 42.3% (n = 2,455) of non-athlete male students and 36.3% (n = 90) of male student-athletes were college ready in all three content areas. Conversely, 31.9% (n = 2,902) of female non-athletes and 39.7% (n=126) of female student-athletes were college ready in all three content areas.

Table 4-10. Frequency of college ready students by gender

# of Content areas	Non-Athlete Students (n = 14,892)		Student-Athletes (n = 565)	
	Male	Female	Male	Female
	Count (%)	Count (%)	Count (%)	Count (%)
None	2,455 (42.3)	2,902 (31.9)	90 (36.3)	126 (39.7)
1 of 3	1,421 (24.5)	2,543 (28.0)	39 (15.7)	56 (17.7)
2 of 3	965 (16.6)	1,808 (19.9)	46 (18.5)	61 (19.2)
3 of 3	964 (16.6)	1,834 (20.2)	73 (29.4)	74 (23.3)

There were also noticeable differences discovered in the level of college readiness between groups of students when considering SES (see [Table 4-11](#)). For instance, over 60% (n = 2791) of high SES non-athletes were college ready in all three content areas, compared to only 24.9% (n = 2570) of low SES non-athletes were college ready in all three content areas. A very similar dichotomy between low SES and high SES students in regards to level of college readiness was found when examining student-athletes. Forty-five percent (n = 163) of high SES student-athletes were college ready in all three content areas compared to only 26% (n=54) of low SES student-athletes. These findings underscore the connection between SES and college readiness as discussed previously in the review of literature.

Furthermore, a decrease in the distribution of high SES non-athletes in elevated levels of remediation was evident from the conducted analysis (i.e., one content area, two content areas,

and three content areas). However, for low SES students, in general, the distribution of students at each level of college readiness remained fairly consistent. There were, however, slight decreases in the distribution of high SES student-athletes in elevated levels of college readiness.

Table 4-11. Frequency of college ready students by SES

# of Content areas	Non-Athlete Students (n=14,913)		Student-Athletes (n=568)	
	Low SES	High SES	Low SES	High SES
	Count (%)	Count (%)	Count (%)	Count (%)
No remediation required	2570 (24.9)	2791 (60.6)	54 (26.1)	163 (45.2)
1 of 3	2963 (28.7)	1007 (21.9)	28 (13.5)	67 (18.6)
2 of 3	2320 (22.5)	458 (9.9)	44 (21.3)	64 (17.7)
3 of 3	2454 (23.8)	350 (7.6)	81 (39.1)	67 (18.6)

Students by Cognitive Content Area

The above sections presented data on the student samples regarding the total number of content areas in which remediation was required by race, gender, and SES for student-athletes and non-athlete students. In continuing an exploration of student’s level of college readiness, the following section provides data on the distribution of college ready students, delineated only by student-athlete status, for each content area. [Table 4-12](#) provides information on the frequency of students that were college ready in math, [Table 4-13](#) the number of students college ready in reading, and [Table 4-14](#) the number of college ready students in the content area writing.

Table 4-12. Frequency of college ready students in the content area math

	College Ready		Not College Ready	
	Frequency	Percentage	Frequency	Percentage
Non-athlete students	6,574	44.1	8,339	55.9
Student-athletes	306	53.9	262	46.1

Table 4-13. Frequency of college ready students in the content area reading

	College Ready		Not College Ready	
	Frequency	Percentage	Frequency	Percentage
Non-athlete students	9,284	62.3	5,629	37.7
Student-athletes	294	51.8	274	48.2

Table 4-14. Frequency of college ready students in the content area writing

	College Ready		Not College Ready	
	Frequency	Percentage	Frequency	Percentage
Non-athlete students	10,943	73.4	3,970	26.6
Student-athletes	349	61.4	219	38.6

Fifty-six percent (n = 8,339) of non-athletes who were not college ready required remediation in math, while the largest percentage of non-college ready student-athletes were found to be deficient in the content area reading (48.2%). Conversely, the largest percentages of student-athletes and non-athletes were found to be college ready in the content area writing. Seventy-three percent (n=10,943) of non-athlete students and 61.4% (n=349) of student-athletes did not require remediation in writing.

Table 4-15. Frequency of students by race and institutional geographical location

Race	Geographic location	Non-Athlete Students		Student-Athletes	
		Count	Percent	Count	Percent
White	Suburban	2368	16.2	83	14.8
	Urban	5561	38.1	201	36.0
	Rural	717	4.9	61	10.9
Students of color	Suburban	1295	8.9	59	10.6
	Urban	4409	30.2	125	22.4
	Rural	252	1.7	30	5.4

Note. Data used for this analysis were taken from the IPEDS 2005 survey.

Students by Race and Gender (Geographic Location)

The following section discusses the distribution of students within institutional characteristics with respect to race and gender (Table 4-15). Non-athlete Students of color and Student-athletes of color were found to be most represented at urban institutions. Approximately 30% (n= 4409) of non-athlete Students of color and 22.4% (n= 125) of Student-athletes of color attended an institution located in an urban geographic area. Overall, Students of color were least represented at institutions located in rural geographic locations. Likewise, White students had the largest representation at institutions located in urban areas, and the lowest representations at

rurally located institutions. Only 5% (n= 717) of White non-athletes and 10.9% (n= 61) of White student-athletes attended a rural institution.

Twenty-six percent (n = 3,931) of male non-athletes and 25% (n = 141) of male student-athletes attended an institution located in an urban area (see [Table 4-16](#)). Rural serving institutions had the smallest representation of male and female student-athletes. Approximately 8% of male student-athletes and 8.5% of female student-athletes attended an institution classified as rural.

Table 4-16. Frequency of students by gender and geographic location

Gender	Geographic location	Non-Athlete Students		Student-Athletes	
		Count	Percent	Count	Percent
Male	Suburban	1527	10.3	62	11.0
	Urban	3931	26.4	141	25.0
	Rural	347	2.3	45	8.0
Female	Suburban	2195	14.7	80	14.2
	Urban	6264	42.1	189	33.5
	Rural	628	4.2	48	8.5

Note. Data used for this analysis were taken from the IPEDS 2005 survey.

Students by and Race and Gender (FTE Enrollment Size)

Thirty-six percent of White non-athletes and 30.9% of White student-athletes attended a very large institution, but were least represented at small institutions (see [Table 4-17](#)). Only 1.4% of all non-athletes and 3.6% of all student-athletes attended small institutions (between 500 and 1,999 FTE enrollment).

From an analysis of the student samples by gender and institutional enrollment size, results concluded that that 20% (n = 4,090) of male non-athletes and 41.7% (n = 6,212) of female non-athletes were represented at very large institutions (see [Table 4-18](#)). The smallest proportion of male and female student-athletes and non-athlete students were enrolled at institutions with FTE enrollments sizes between 500 and 1,999.

Table 4-17. Frequency of students by race and institutional FTE enrollment size

Race	Enrollment Size (FTE)	Non-Athlete Students		Student-Athletes	
		Count	Percent	Count	Percent
White	Small (500 - 1,999)	202	1.4	20	3.6
	Medium (2,000 - 4,999)	1397	9.6	79	14.1
	Large (5,000 - 9,999)	1,760	12.1	73	13.1
	Very large (at least 10,000)	5287	36.2	173	30.9
Students of color	Small (500 - 1,999)	100	0.7	17	3.0
	Medium (2,000 - 4,999)	469	3.2	47	8.4
	Large (5,000 - 9,999)	616	4.2	33	5.9
	Very large (at least 10,000)	4,771	32.7	117	20.9

Note. Data used for this analysis were taken from the IPEDS 2005 survey.

Table 4-18. Frequency of students by gender and institutional FTE enrollment size

Gender	Enrollment Size	Non-Athlete Students		Student-Athletes	
		Count	Percent	Count	Percent
Male	Small (500 - 1,999)	125	0.8	15	2.7
	Medium (2,000 - 4,999)	698	4.7	60	10.6
	Large (5,000 - 9,999)	892	6.0	48	8.5
	Very large (at least 10,000)	4,090	27.5	125	22.1
Female	Small (500 - 1,999)	175	1.2	22	3.9
	Medium (2,000 - 4,999)	1,196	8.0	69	12.2
	Large (5,000 - 9,999)	1,504	10.1	58	10.3
	Very large (at least 10,000)	6,212	41.7	168	29.7

Note. Data used for this analysis were taken from the IPEDS 2005 survey.

Outcomes by Level of College Readiness, Race and Gender

The following section provides the frequency of degrees earned and four-year transfer completed by level of college readiness, race, and gender. The present analysis utilized a time parameter of 11 academic semesters (including summer terms) to measure student persistence, and the degree completion and four-year transfer.

Approximately 18% (n=2,700) of the total non-athlete student sample and 4.7% (n=27) of the student-athlete sample were still enrolled during the fall 2007 term. A total of 3,305 non-athletes and 177 student-athletes had either earned a degree or transferred to a four-year institution during the fall 2007 term. The following section will further discuss outcomes for specific sub-groups of student-athletes and non-athlete students.

Degrees Earned by Level of College Readiness

In [Table 4-19](#), the distribution of degrees earned by level of college readiness is presented. For non-athlete students, a large majority of the total degrees awarded were earned by students that did not require remediation at the community college. Specifically, 56.6% (n=1837) of all degrees were awarded to students that were college ready. In comparison, 23.7% (n=772) of all degrees earned were earned by students requiring remediation in one content and 12.4% (n=404) by students who required remediation in two content areas. Only 7.1% (n=232) of the degrees awarded to non-athlete students were earned by students that required remediation in math, reading and writing.

Table 4-19. Percentage of degrees earned by level of college readiness

Level of college readiness	Frequency	Percent
Non-Athlete Students (n=3,176)		
No remediation required	1837	56.6
1 of 3	772	23.7
2 of 3	404	12.4
3 of 3	232	7.1
Student-Athletes (n=175)		
No remediation required	88	50.2
1 of 3	32	18.2
2 of 3	27	15.4
3 of 3	28	16.0

Of the total degrees earned by student-athletes, 50.2% (n=88) were awarded to students that were college ready in all three content areas. Within remaining levels of college readiness, there were only small percentage differences found between the degrees earned by students that required remediation in one content area (18.2%), two content areas (15.4%), and three content areas (16.0%).

Degrees Earned by Race and Gender

The present study also incorporates an analysis of the distribution of degree earned by race. The conducted descriptive analysis revealed that a total of 909 non-athlete Students of color, and 2,267 White non-athletes earned a degree from the community college (see [Table 4-20](#)). A combined total of 173 student-athletes earned an academic degree: Fifty Students of color and 123 White students. In regards to the total percentage of degrees earned for all students in the sample, White student-athletes had the highest group percentage of degrees earned, and non-athlete Students of color had the lowest percentage of degrees earned. Thirty-six percent of all White student-athletes earned a degree; only 15.3% of all non-athlete Students of color earned a degree within 11 semesters of initial enrollment.

Table 4-20. Percentage of degrees^a earned by student-athlete status and race

Race	Non-Athletes Students		Student-Athletes	
	Count	Percent	Count	Percent
White	2,267	26.2	123	35.7
Students of color ^b	909	15.3	50	23.4

Note. Total degrees earned do not include students for which race/ethnicity is unknown. Percentages equal the percentage of total degrees earned for each race by student-athlete status. ^a Associates of Arts, Associates of Science, Associate of Science Certificate, Vocational Certificate.

Similar to previous research (e.g., Bailey, Calcagno, Jenkins, Leinbach, and Kienzl, 2006), female students had the highest group percentage of academic degrees earned for both athlete and non-athlete samples. Sixty percent (n= 1,960) of the degrees earned by non-athletes were earned by female students, and 63.7% (n= 111) of degrees earned by student-athletes were earned by female students (see [Table 4-21](#)).

Table 4-21. Frequency of degrees^a earned by gender

Gender	Non-Athletes Students		Student-Athletes	
	Count	Percent	Count	Percent
Male	1,283	39.5	63	36.2
Female	1,960	60.4	111	63.7

Four-Year Transfer by Race and Gender

When considering race and four-year transfer, overall, the conducted descriptive statistics revealed that a higher percentage of White students transferred to four-year institutions than Students of color. Approximately 77% (n= 184) of all White non-athletes and 86% of all White student-athletes transferred to a four-year institution (see [Table 4-22](#)). Interestingly, Student-athletes of color constituted only 14% of all student-athletes that transferred to a four-year institution.

Table 4-22. Percentage of four-year transfer by race

Race	Non-Athletes Students		Student-Athletes	
	Count	Percent	Count	Percent
White	184	77.3	12	86.0
Students of color	54	22.6	2	14.0

^a Associates of Arts, Associates of Science, Associate of Science Certificate, Vocational Certificate. ^b Students of color includes students from Black, Hispanic, Asian, and American Indian ethnic/racial backgrounds

When examining four-year transfer by gender, female students had the highest percentage of four-year transfers completed across student-athlete and non-athlete samples (see [Table 4-23](#)). Approximately 70% of all student transfers completed by non-athletes were completed by female students. To put these findings into further perspective, a combined total of 254 students transferred to a four-year institution, and within this total 176 of these transfers were successfully completed by female students.

Table 4-23. Percentage of four-year transfer by gender

Gender	Non-Athlete Students		Student-Athletes	
	Count	Percent	Count	Percent
Male	72	30.0	6	43
Female	168	70.0	8	57

Degree Attainment and Four-Year Transfer by Race and Gender

As seen in the preceding results, very few students in the given samples completed a degree or transferred to a four-year institution. In total, considering athlete and non-athlete

student samples, only 1.9% (n=192) of students completed a degree and transferred to a four-year institution. This section discusses the frequency of non-athlete students and student-athletes that earned a degree and transferred to a four-year institution prior to the spring 2008 academic term.

White non-athlete students and student-athletes had the highest group percentages of academic degrees earned and four-year transfer completed. Nearly 80% (n=141) of all White non-athletes and 92% (n=11) of all White student-athletes, who successfully completed a degree, also transferred to a four-year institution (see [Table 4-24](#)).

Table 4-24. Frequency of academic degrees^a earned and four-year transfer completed by Race

Race	Non-Athlete Student		Student-Athletes	
	Count	Percent	Count	Percent
White	141	79.2	11	92
Students of color ^b	37	20.7	1	8.3

^a Associates of Arts, Associates of Science, Associate of Science Certificate, Vocational Certificate. ^b Students of color includes students from Black, Hispanic, Asian, and American Indian ethnic/racial backgrounds

Female students in the given samples represented the highest percentage of academic degrees earned and four-year transfer completed for student-athletes and non-athletes students (see [Table 4-25](#)). Seventy-one percent of female non-athletes and 67% of female student-athletes who completed a degree also transferred to a four-year institution.

Table 4-25. Frequency of degrees^a earned and four-year transfer by gender

Gender	Non-Athlete Student		Student-Athletes	
	Count	Percentage	Count	Percentage
Male	52	28.8	4	33.0
Female	128	71.1	8	67.0

^a Academic degrees represents Associates of Arts, Associates of Science, Associate of Science Certificate, Vocational Certificate

Descriptive Statistics for Continuous Independent Variables

The following section examines the mean credit hours enrolled per semester, credit hours earned, and GPA for the non-athletes and student-athletes in the included samples (see [Table 4-26](#)). The results from the descriptive analysis for the continuous variables indicated that student-athletes had a mean GPA of 2.59 (SD = 0.84) compared to non-athlete students who had a mean GPA of 2.29 (SD = 1.17). Moreover, student-athletes (M= 10.08, SD = 4.005) were also found to have earned more credit hours per semester than non-athletes (M = 9.00, SD = 3.128). Further exploration using ANOVA and *t*-tests statistical methods were employed to see if differences in GPA and course credits hours earned were statistically significant.

Table 4-26. Descriptive Statistics for Continuous Independent Variables

Student-athlete status	N	Mean	Std. Deviation
<i>Non-Athlete Students</i>			
Credit hours enrolled per semester	14,913	9.007	3.128
Credit hours earned per semester	14,891	6.186	3.691
Grade point average (GPA)	14,913	2.295	1.175
<i>Student-Athletes</i>			
Credit hours enrolled per semester	568	12.539	2.942
Credit hours earned per semester	561	10.087	4.005
Grade point average (GPA)	568	2.592	0.846

Independent Sample T-Tests

Independent sample *t*-tests were conducted to explore if differences between non-athlete students and student-athlete's GPA and credit hours earned were significantly different. Between group comparisons were made for athlete and non-athlete students, and selected sub-groups of athletes and non-athlete students (e.g., Students of color, female, and low SES students). The results for the conducted *t*-tests will be presented in this section, and have been divided into two separate parts. The first portion will compare groups and sub-groups on GPA, and the second will explore group mean differences in course credits hours earned.

Independent sample *t*-tests were conducted on the premise that the assumptions of independent *t*-tests (e.g., normal distribution of data, homogeneity of variance, data are independent) were not violated. A significant *p* value ($p \leq .05$) on Levene's Test of Equality of Variance, however, suggested that the equal variance assumption had been violated in the analysis of GPA for selected group members in the student samples. The violation of this assumption has no substantial effect on the presented results (Hays, 1963), as the results do not assume groups have equal variances.

Table 4-27. Analysis of mean GPA for student-athletes and non-athlete students

Comparisons	Levene's test of equal variance		<i>Df</i>	<i>t</i>	Mean difference	Std. Error	<i>p</i>
	F	Sig					
Non-athletes vs. Athletes	134.01	0.000	653.265	-8.081	-.2972	0.036	.000*
Non-athletes (SOC) vs. Athletes (SOC)	71.16	0.000	247.226	-7.481	-.4114	0.0550	.000*
Non-athletes (Female) vs. Athletes (Female)	90.95	0.000	368.480	-7.237	-.3253	0.0449	.000*
Non-athletes (Low SES) vs. Athletes (Low SES)	62.07	0.000	223.371	-4.718	-.2760	0.0585	.000*

* Mean difference is significant at the $p \leq .05$ significance level.

From conducted *t*-tests, significant differences were found for mean GPA between athletes and non-athlete students at the community college (see [Table 4-27](#)). A difference in GPA of -.2972 was found between athletes and non-athlete students. The found differences between student-athletes and non-athlete students GPA were significant at the .001 alpha level ($t = -8.08$, $df = 653.265$, $p \leq .05$). From the result for the *t*-test, conclusions can be drawn, based on the student sample for this study, that non-athletes have significantly lower GPAs than student-athletes. Further examination into sub-groups of students illustrated that non-athletes also have significantly lower GPAs when considering non-athlete Students of color and Student-athletes of color ($t = -7.48$, $df = 247.226$, $p \leq .05$), non-athlete female students and female student-athletes ($t =$

-7.23, $df = 368.480$, $p \leq .05$), and low SES non-athletes and low SES student-athletes ($t = -4.71$, $df = 223.371$, $p \leq .05$).

Additional, subsequent analyses also revealed there were significant differences in mean credit hours earned per semester between select sub-groups of athletes and non-athlete students. Based on a non-significant p value ($p > .05$) for Levene's Test of Equality of Variance, the equal variance assumption was met. A difference of -3.90 ($t = -24.49$, $df = 15,450$, $p \leq .05$) in mean credit hours earned per semester for non-athletes and student-athletes was found and concluded to be significant at the $p \leq .05$ alpha level (see [Table 4-28](#)). Findings for the t -tests provide evidence that non-athletes earn significantly fewer credit hours per semester than student-athletes. Further analysis illustrated that differences between student-athletes and non-athlete students were maintained, even when considering select sub-groups of non-athletes and student-athletes in the samples. For instance, non-athlete Students of color earned fewer credit hours than Student-athletes of color ($t = -17.20$, $df = 6163$, $p \leq .05$), high SES non-athletes earned fewer credit hours than high SES student-athletes ($t = -14.98$, $df = 4949$, $p \leq .05$), and low SES non-athletes earned fewer hours than low SES student-athletes ($t = -15.52$, $df = 10499$, $p \leq .05$).

Table 4-28. Analysis of course credit hours earned for student-athletes and non-athlete students

Comparisons	Levene's test of equal variance		Df	t	Mean difference	Std. Error	p
	F	Sig.					
Non-athletes vs. Athletes	1.140	0.286	15450	-24.492	-3.90	.159	.000*
Non-athletes (SOC) vs. Athletes (SOC)	0.162	0.687	6163	-17.270	-4.21582	.24412	.000*
Non-athletes (High SES) vs. Athletes (High SES)	0.066	0.797	4949	-14.980	-3.09020	.20629	.000*
Non-athletes (Low SES) vs. Athletes (Low SES)	2.285	0.131	10499	-15.528	-3.92119	.2525	.000*

* Mean difference is significant at the $p \leq .05$ significance level.

Analysis of Variance (ANOVA)

Between group comparisons were also incorporated into the present study to explore if differences in student's academic performance (GPA) at the community college, were significantly different across institutional characteristics. The constructed ANOVA models were not intended to compare differences in GPA between student-athletes and non-athlete students specifically, but intended to examine differences within institutional characteristics as a whole.

Geographic Location

The first ANOVA model provides an analysis of student's academic performance at institutions located in rural, urban and suburban geographic location (see [Table 4-29](#)). The ANOVA suggested that significant differences in GPA were present between students at institutions located in rural, urban, and suburban geographic locales ($F = 8.68, p \leq .001$). To better understand where specific differences were found, orthogonal contrasts were conducted using Bonferroni's Post-hoc Tests. Bonferroni's Post-hoc test uses multiple t -Tests to perform pairwise comparisons between group means. An advantage of Bonferroni's Post-hoc is that it controls the overall error rate by adjusting the experimentwise error rate according to the number of individual comparisons that are conducted (Field, 2005).

Table 4-29. One-way ANOVA of mean differences in student GPA by geographic location

	Sum of squares	<i>df</i>	Mean square	F	<i>p</i>
Between Groups	23.603	2	11.802	8.684	.000***
Within Groups	21033.843	15478	1.359		
Total	21057.446	15480			

Significant differences in student's academic performance as measured by GPA were found between students attending suburban and urban institutions, and between students at suburban and rural institutions (see [Table 4-30](#)). Results from the ANOVA for GPA differences based on institutions geographic location suggests that students at suburban institutions have

significantly higher GPAs than students attending urban ($0.084, p \leq .05$) and rural institutions ($0.120, p \leq .05$). No significant differences were found in GPA between student at urban and rural institutions.

Table 4-30. Bonferroni's post-hoc tests of mean differences in GPA between institutional geographic locations

(I) Geographic location (group mean)	(J) Geographic Location	Mean Difference (I-J)	Std. Error
Suburban (2.371)	Urban	0.08418*	0.02189
	Rural	0.12081*	0.04022
Urban (2.287)	Suburban	-0.08418*	0.02189
	Rural	0.03663	0.03737
Rural (2.251)	Suburban	-0.12081*	0.04022
	Urban	-0.03663	0.03737

*Mean difference is significant at the at the $p \leq .05$ significance level.

FTE Enrollment Size

A second ANOVA was performed to examine if significant differences were present for student's academic performance (GPA) at institutions with small, medium, large and very large FTE enrollment sizes. Results from the one-way ANOVA suggested that there were indeed significant differences between student's academic performance ($F = 7.77, p \leq .001$), when considering an institution's FTE enrollment size (see [Table 4-31](#)).

Table 4-31. One-way ANOVA of mean differences in student GPA by institutional FTE enrollment size

	Sum of Squares	Df	Mean Square	F	p
Between Groups	31.655	3	10.552	7.767	.000***
Within Groups	21025.791	15477	1.359		
Total	21057.446	15480			

Multiple comparisons of institutional characteristics using Bonferroni's Post-hoc tests provided further insight into where specific differences could be found (see [Table 4-32](#)). From the performed orthogonal comparisons, results concluded that student's GPA at institutions with small enrollment sizes were significantly higher than student's GPA at institutions with medium

FTE enrollments sizes (0.25545, $p \leq .05$). Moreover, student's GPA at institutions with medium enrollment sizes were significantly lower than student's GPA at institutions with large enrollment sizes (-.02858, $p \leq .05$), as well as significantly lower than the GPAs earned for students at institutions with very large FTE enrollments sizes (-.11089, $p \leq .05$).

Table 4-32. Bonferroni's post-hoc tests of mean differences in GPA between institutional FTE enrollment size

(I) Institutional FTE Enrollment Size (group mean)	(J) Institutional FTE Enrollment Size	Mean Difference (I-J)	Std. Error
Small (2.459) [500 - 1,999]	Medium	0.25545*	0.06840
	Large	0.12687	0.06746
	Very large	0.14457	0.06431
Medium (2.203) [2,000 - 4,999]	Small	-0.25545*	0.06840
	Large	-0.012858*	0.03484
	Very large	-0.11089*	0.02826
Large (2.332) [5,000 - 9,999]	Small	-0.12687	0.06746
	Medium	0.12858*	0.03484
	Very large	0.01769	0.02590
Very large (2.314) [at least 10,000]	Small	-0.14457	0.06431
	Medium	0.11089*	0.02826
	Large	-0.01769	0.02590

*Mean difference is significant at the $p \leq .05$ significance level.

General Linear Models (GLM) with Binary Dependent Outcome Variables

Logistic regression statistical methods were employed to better understand the factors that best predict the likelihood students will earn a degree, transfer to a four-year institution, or receive a degree and transfer to a four-year institution. Logistic regressions are the preferred method of analysis when dependent variables are dichotomous (Cabrera, Burkum, LaNasa, 2005; Peng, Lee, & Ingersoll, 2002; Powers & Xie, 2000). Logistic regression statistical procedures are helpful when researchers are interested in estimating the probability that an event will occur (i.e., college enrollment, persistence, success, failure), for students with specific characteristics (Cabrera, Burkum, LaNasa, 2005; Peng, Lee, & Ingersoll, 2002; Powers & Xie, 2000).

In this study, each regression model was constructed using identical predictor factors (i.e., student-athlete status, individual characteristics, pre-college characteristics, institutional characteristics). The following section will present and discuss significant findings from the conducted logistic regression analyses. Results will be discussed in term of odds-ratios ($Exp(\beta)$), which represent the odds change for a one-unit change in the predictor or independent variable, when all other predictor variables in the equation are held at a constant value (Peng, So, Stage, & St. John, 2002). Additionally, probabilities are another commonly used term to express odds-ratios in this study. Probability values serve as a method in which to explain the likelihood of an event occurring for one designated group over another group (e.g., male students versus female students), and are discussed as a percentage ($Exp(\beta) \times 100$) or decimal value ($Exp(\beta) = .469$).

However, odds-ratio calculations for continuous predictor variables are more complicated to interpolate than the presented odds-ratio for categorical predictor variables (Powers & Xie, 2000). For instances where results will be discussed for continuous variables included in the regression models, the odds-ratios of an event occurring were calculated at different values of the continuous variable, using the following formula:

$$\frac{Exp\{\beta_1(\chi+1)\}}{Exp(\beta_1\chi)} = Exp\{\beta_1(c)\},$$

where, β_1 is the coefficient's beta weight, and χ is the selected value of the independent continuous variable (see [Appendix B](#) for all calculations that were performed using the above formula).

The presentation of results for the logistic regressions will begin with results for regression Model 1 (degree completion), followed by a presentation and discussion of the results for the logistic regressions conducted for the remaining dependent variables: four-year transfer (Model 2) and the interaction variable for degree attainment and four-year transfer (Model 3).

General Linear Model 1: Degree Attainment

A significant p value of less than $p \leq .001$ for Model 1 was found, which suggests that the regression equation including the predictor variables was significantly improved, or better fitted, than the model considering only the constant. The regression model predicted degree attainment correctly for 82.1% of the students in the sample. Model 1 contained a number of factors that were significant in predicting student's propensity to earn a degree from a Florida community college (see Table 4-33). Ten of the 24 predictor variables in the equation were found to be significant (see Table 4-34).

Table 4-33. Binary logistic regression model measures model 1: Degree attainment

	Chi-square	<i>df</i>	Sig.	Nagelkerke R Square	% predicted Correctly
Probability of degree	4520.351	24	0.000***	.396	82.1

***Significant at the $p \leq .001$ level

Student-Athlete Status

For model 1, student-athlete status was a significant factor in predicting degree attainment for community college students. Specifically, student-athletes were found to be 0.118 times less likely ($\beta = -2.140$, $p \leq .01$) than non-athlete students to earn a degree from the community college, holding all other variables constant.

Individual Background Characteristics

Individual characteristics in this study included gender, race, and SES. When considering these factors on the probability of degree attainment, no significant differences in the probability of degree attainment were found between students, with respect to a race and gender. Student SES was the only factor for individual characteristic that was found to be significant in model 1. Results indicated that low SES students were extremely disadvantaged compared to high SES

students. Low SES students were .883 times less likely ($\beta=-0.125$, $p\leq.05$) than high SES students to complete a degree at the community college.

Table 4-34. Results for binary logistic regression model 1: Degree attainment

Variable	Beta	Exp(β)	Std. Error	Wald
<i>Student-Athlete Status</i>				
Student-athlete	-2.140**	0.118	0.774	7.654
<i>Individual Background Characteristics</i>				
Female	0.039	1.040	0.050	0.615
Student of color	-0.043	0.958	0.056	0.594
Low SES	-0.125*	0.883	0.054	5.253
<i>Pre-College Characteristics</i>				
Delayed entry to college	-0.503***	0.605	0.056	79.901
Not college ready (Math)	-0.404***	0.667	0.055	53.976
Not college ready (Reading)	0.000	1.000	0.068	0.000
Not college ready (Writing)	-0.174*	0.840	0.077	5.138
<i>Academic Experiences</i>				
Comm. college GPA ^a	0.984***	2.675	0.040	607.111
Mean credit hours earned ^a	0.249***	1.283	0.009	807.201
<i>Institutional Characteristics</i>				
Small FTE enrollment	-0.133	0.876	0.199	0.444
Medium FTE enrollment	0.020	1.020	0.087	0.051
Large FTE enrollment	-0.252***	.777	0.066	14.775
Urban institution	-0.142**	.867	0.056	6.567
Rural institution	0.082	1.086	0.146	0.317
<i>Interaction Terms</i>				
Student-athlete*Female	0.390	1.477	0.233	2.789
Student-athlete*Students of color	-0.029	0.971	0.285	0.010
Student-athlete*Low SES	-0.006	0.994	0.272	0.000
Student-athlete*Not college ready (Math)	-0.148	0.863	0.271	0.297
Student-athlete*Not college ready (Reading)	-0.020	0.980	0.328	0.004
Student-athlete*Not college ready (Writing)	0.402	1.495	0.329	1.498
Student-athlete*Comm. College GPA ^a	0.395	1.484	0.241	2.678
Student-athlete*Rural	-0.758*	0.469	0.376	4.068
Student-athlete*Urban	0.369	1.446	0.271	1.856
Constant	-5.252***	0.005	0.143	1340.439

* $p\leq .05$, ** $p\leq .01$, *** $p\leq .001$. Note: ^a Indicates the independent variable is continuous

Pre-College Characteristics

Three of the four variables included in pre-college characteristics were found to be significant in predicting degree completion. Students who delayed entry to college beyond one calendar year, and those that were not college ready in math or writing were found to have decreased odds of completing a degree at the community college, compared to their inverse reference group.

Students who delayed college entry beyond one year after high school were nearly 61% less likely ($\beta = -0.503$, $p \leq .001$) to earn a degree, compared to students who immediately enroll in college. Overall, 60% ($n=9,282$) of students in the sample entered college within a year of completing a high school diploma. The odds of completing a degree drastically decreased for students that were not college ready in math and writing. The probability of earning a degree decreased by 66.7% ($\beta = -0.404$, $p \leq .001$) for students not ready in math, and decreased by 84% ($\beta = -0.174$, $p \leq .05$) for students not college ready in writing, compared to students that were college ready in math and writing, respectively.

Academic Experiences

The results for regression model 1 concluded that student's academic experiences (i.e., GPA and credit hours earned per semester) at the community college were highly significant in predicting degree completion. As would be expected, students who earned higher GPAs, and those that earned more credit hours per semester while enrolled in the community college, were more likely than their peers to earn a degree. For instance, students who earned a GPA of 2.30 (mean GPA for all students) were 2.42 times more likely ($\beta = 0.984$, $p \leq .001$) to earn a degree than students who accumulated a GPA of 1.30; and students who earned a GPA of 3.30 were 6.49 times more likely ($\beta = 0.984$, $p \leq .001$) to earn a degree than students with a 2.30 grade point average.

In regards to the impact of credit hours earned on degree attainment, students who earned 11 credit hours each semester were 3.41 times more likely ($\beta = 0.249, p \leq .001$) to earn a degree than student who only earned 10 credit hours each semester; and students who earned 12 credit hours each semester were 4.37 more times likely to earn a degree than students who earned 11 credit hours each semester.

Institutional Characteristics

When considering the impact of institutional characteristics on student outcomes, only two predictor variables (i.e., large FTE enrollment, urban) were found to be significant. Students who attended institutions with large FTE enrollment sizes (5,000 to 9,999) were 0.777 times less likely ($\beta = -0.252, p \leq .001$) to earn a degree than students at very large institutions (FTE 10,000 or more). When considering the impact of geographic locale, students who attended urban institutions were found to be 0.867 time less likely ($\beta = -0.142, p \leq .01$) to earn a degree, compared to students attending institutions in suburban areas.

Interaction Terms

Several interaction terms were incorporated in the models to specifically explore the influence of athletic status on groups of predictor variables, for predicting student degree completion. A total of nine interaction terms that were included in the regression model, but only one interaction term (student-athlete status*rural) was found to be significant. Student-athletes at urban institutions were found to be 0.469 times less likely ($\beta = -0.758, p \leq 0.05$) to earn a degree than student-athletes at suburban institutions.

General Linear Model 2: Four-Year Transfer

As with regression Model 1 (degree completion), a significant p value of less than $p \leq 0.001$ indicated that the model was better fitted than when considering only the constant variable (see Table 3-35). Model 2 correctly predicted four-year transfer for 98.4% of the students in the

samples (see Table 4-36). Only eight of the 24 predictor variables included in the model were found to be significant in predicting four-year transfer.

Table 4-35. Binary logistic regression model measures model 2: Four-year transfer

	Chi-square	df	Sig.	Nagelkerke R Square	% predicted Correctly
Probability of four-year transfer	639.638	24	.000***	0.270	98.4

***Significant at the $p \leq .001$ level

Student-Athlete Status

The results for regression model 2 indicated that student-athlete status was not a significant factor in predicting four-year transfer. In essence, the results indicate that student-athletes have the same odds of transferring to a four-year institution from the community college as non-athlete students.

Individual Background Characteristics

The logistic regression for Model 2 resulted in significant values for the variables gender and SES, which suggests gender and SES are highly significant factors to considering when considering the probability of student transfer at the community college. In particular, female students were found to be nearly two times more likely ($\beta = 0.600$, $p \leq .001$) than male students to successfully transfer to a four-year institution, when holding all other predictor variable constant. As previous literature has suggested, students in the study from low SES backgrounds were severely disadvantaged in regards to their odds of successfully transferring to a four-year institution. Results from the statistical analysis indicated that low SES students were approximately 51% less likely ($\beta = -0.675$, $p \leq 0.001$) to transfer than high SES students.

Pre-College Characteristics

Net all other predictor variables in the model, delayed entry and college readiness in math and writing were found to be significant factors in predicting student transfer. The effects of pre-college characteristics on four-year transfer were similar to the effects found for the group of

Table 4-36. Results for binary logistic regression model 2: Four-year transfer

Variables	β	$Exp(\beta)$	Std. Error	Wald
<i>Intercollegiate Athletics</i>				
Student-athlete	1.414	4.113	2.080	0.462
<i>Individual Background Characteristics</i>				
Female	0.600***	1.822	0.152	15.566
Student of color	0.223	1.250	0.174	1.634
Low SES	-0.675***	0.509	0.159	17.965
<i>Pre-College Characteristics</i>				
Delayed entry to college	-0.576**	0.562	0.204	7.945
Not college ready (Math)	-0.732***	0.481	0.205	12.721
Not college ready (Reading)	-0.322	0.725	0.280	1.326
Not college ready (Writing)	-1.491**	0.225	0.543	7.548
<i>Academic Experiences</i>				
Comm. College GPA ^a	1.251***	3.493	0.156	64.403
Mean credit hours earned ^a	0.232***	1.262	0.026	81.995
<i>Institutional Characteristics</i>				
Small FTE enrollment	0.700	2.014	0.551	1.615
Medium FTE enrollment	-0.056	0.946	0.245	0.052
Large FTE enrollment	-0.465*	0.628	0.204	5.183
Urban institution	0.297	1.345	0.170	3.045
Rural institution	-0.057	0.945	0.469	0.015
<i>Interaction Terms</i>				
Student-athlete*Female	-0.845	0.430	0.594	2.021
Student-athlete*Students of color	-1.113	0.329	0.930	1.431
Student-athlete*Low SES	0.593	1.809	0.779	0.579
Student-athlete*Not college ready (Math)	0.350	1.420	0.811	0.187
Student-athlete*Not college ready (Reading)	0.608	1.838	0.837	0.528
Student-athlete*Not college ready (Writing)	1.088	2.968	1.120	0.944
Student-athlete*Comm. College GPA	-0.338	0.713	0.624	0.293
Student-athlete*Rural	-0.998	0.369	0.956	1.089
Student-athlete*Urban	-0.665	0.514	0.667	0.995
Constant	-9.620***	0.000	0.556	299.003

*p< .05, **p<.01, ***p<.001. Note: ^a Indicates the independent variable is continuous.

pre-college characteristics in predicting degree completion (Model 1). Specifically, students who delayed entry to college were 0.562 times less likely ($\beta = -0.576$, $p \leq 0.01$) to transfer to a four-year institution, compared to students that did not delay entry.

Taking into account college readiness in math, non-college ready students were 0.481 times less likely ($\beta = -0.732$, $p \leq .001$) to transfer than students that were college ready in math. The odds of transfer for students that were not college ready in the content area writing were also shown to decrease. Non-college ready students were approximately 23% less likely ($\beta = -1.491$, $p \leq 0.01$) to transfer compared to students that were college ready in writing.

Academic Experiences

When holding all other predictor variables constant, student GPA and the number of credit hours earned were highly significant in predicting student transfer. A one unit increase in GPA from 2.30 to 3.30 increased the odds of student transfer by 810% ($\beta = 1.251$, $p \leq .001$). Results for the logistic regression further suggest that a one unit increase in the number of credit hours earned per semester, from 10 credit hours to 11 credit hours, increased the likelihood that a student would of transfer to a four-year institution by approximately 266% ($\beta = 0.232$, $p \leq .001$).

Institutional Characteristics

The variable LARGE was the only significant factor in the group of institutional characteristics variables to have an impact on student transfer. Students enrolled at community college in the state of Florida with large FTE enrollment sizes (5,000 to 9,999), were 0.628 times less likely to transfer than students attending community colleges in the state with very large FTE enrollments sizes (10,000 or more).

Interaction Terms

There were no significant results found within the interaction terms included in model 2. Accordingly, since no significant factors were found reveals that student-athletes and non-athlete students have equals odds of transferring to a four-year institution, even when considering gender, college readiness in math, writing and reading, GPA, and an institution's geographic location.

General Linear Model 3: Degree Attainment and Four-Year Transfer

The final regression model examined the likelihood of degree completion and four-year transfer for student-athletes and non-athlete students enrolled at community colleges. As in the previous two models that have been discussed, model 3 was also significant at the $p \leq .001$ significance level. A significant p value indicates the regression model was better fitted than when considering only the constant variable. The logistic regression model correctly predicted group membership (0/1) for 98% of the students in the samples (see Table 4-37). Eight of 24 predictor variables included in model 3 were found to have a significant impact on predicting the likelihood of degree attainment and four-year transfer (see Table 4-38).

Table 4-37. Binary logistic regression model measures model 3: Degree attainment and four-year transfer

	Chi-square	<i>df</i>	Sig.	Nagelkerke R Square	% predicted Correctly
Probability of degree*four-year transfer	593.647	23	0.000***	0.310	98.8

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Student-Athlete Status

Student-athlete status was not a significant factor in model 3. Accordingly, from the logistic regression analysis, the conclusion can be drawn that no significant differences exists in the probability of degree completion and four-year transfer between community college student-athletes and non-athlete students in the state of Florida.

Individual Background Characteristics

When considering the probability of degree attainment and transfer, gender and socio-economic status were found to highly significant factors. Female students were 1.87 times ($\beta = 0.630$, $p \leq .001$) more likely than male students to complete both a degree and four-year transfer. Students from low SES backgrounds were also found to be severely disadvantaged in regards to their probability of earning a degree and transferring to a four-year institution at the community

college. Low SES students were 57.4% less likely ($\beta = -0.554$, $p \leq .01$) than high SES students to successfully complete both outcomes.

Table 4-38. Results for binary logistic regression model 3: Degree attainment and four-year transfer

Variables	Beta	Exp(β)	Std. Error	Wald
<i>Student-Athlete Status</i>				
Student-athlete	3.341	28.238	2.345	2.029
<i>Individual Background Characteristics</i>				
Female	0.630***	1.877	0.179	12.357
Student of color	0.159	1.172	0.207	0.588
Low SES	-0.554**	0.574	0.184	9.101
<i>Pre-College Characteristics</i>				
Delayed entry to college	-0.967***	0.380	0.258	14.010
Not college ready (Math)	-0.481*	0.618	0.236	4.160
Not college ready (Reading)	-0.319	0.727	0.338	0.890
Not college ready (Writing)	-1.818*	0.162	0.754	5.811
<i>Academic Experiences</i>				
Comm. College GPA ^a	1.810***	6.112	0.205	77.626
Mean credit hours earned ^a	0.269***	1.309	0.030	79.591
<i>Institutional Characteristics</i>				
Small FTE enrollment	0.713	2.039	0.616	1.336
Medium FTE enrollment	-0.090	0.914	0.288	0.097
Large FTE enrollment	-0.588*	0.555	0.242	5.926
Urban institution	0.224	1.251	0.196	1.308
Rural institution	0.140	1.150	0.519	0.072
<i>Interactions Terms</i>				
Student-athlete*Female	-0.447	0.639	0.686	0.426
Student-athlete*Students of color	-1.757	0.172	1.218	2.081
Student-athlete*Low SES	0.960	2.612	0.801	1.438
Student-athlete*Not college ready (Math)	-0.228	0.796	0.956	0.057
Student-athlete*Not college ready (Reading)	0.608	1.837	0.892	0.464
Student-athlete*Not college ready (Writing)	1.226	3.407	1.431	0.733
Student-athlete*Comm. College GPA	-0.888	0.411	0.697	1.623
Student-athlete*Rural	-18.580	0.000	3936.030	0.000
Student-athlete*Urban	-0.626	0.535	0.684	0.836
Constant	-12.219***	0.000	0.752	263.969

Pre-College Characteristics

As in the preceding two models, delayed entry, college readiness in math and writing were found to be significant in Model 3. Delayed entry and college readiness in math and writing have been found to be highly significant factors in predicting student outcomes at the community college. Within the context of results for Model 3, students who delayed college entry were 38% less likely ($\beta = -0.967$, $p \leq .001$) to earn a degree and transfer than students who immediately enrolled in college. The odds of degree attainment and transfer were drastically decreased for students that were not college ready in math and writing. Students not ready in math were 0.618 times less likely ($\beta = -0.481$, $p \leq 0.05$) to earn a degree and transfer; students not college ready in writing were 0.162 times less likely ($\beta = -1.818$, $p \leq 0.05$) to earn a degree and transfer compared to students that were college ready in math and writing, respectively.

Academic Experiences

As with previous regression models that have been discussed, GPA and credit hours earned were significant factors in predicting degree attainment and transfer. The odds of degree completion and transfer increased as each independent variable (i.e., GPA, credit hours earned) increased in value. For example, students who earned a 2.30 GPA (mean GPA for all students) were 1.16 times more likely ($\beta = 1.810$, $p \leq .001$) to earn a degree and transfer than students who accumulated a GPA of 1.30. Moreover, students who earned a GPA of 3.30 (a one unit increase from the mean GPA for all students) were 7.09 times more likely ($\beta = 1.810$, $p \leq .001$) to earn a degree and transfer than students who acquired a GPA of 2.30.

The regression model for the dependent variable, degree attainment and four-year transfer, revealed that the number of credit hours earned each semester was a significant indicator in estimating the probability of degree completion and transfer, for students at the community college. Students who earned 11 credit hours per academic semester were 4.54 times more likely

($\beta = 0.269, p \leq .001$) to earn a degree and transfer than students who earned ten course credit hours per semester (a one unit change). Students who earned 12 credit hours were nearly six times more likely ($\beta = 0.269, p \leq .001$) to earn a degree and transfer than student that accumulated only 11 credit hours each semester.

Institutional Characteristics

Overall, institutional characteristics were not found to be extremely relevant in predicting degree attainment and four-year transfer. For the variables included in institutional characteristics, the variable representing large institutions was the only variable found to have a significant impact on degree completion and transfer. Students attending community college in the state with large FTE enrollment sizes (5,000 - 9,999) were approximately 56% less likely ($\beta = -0.588, p \leq .05$) to earn a degree and transfer than a student attending community college with very large FTE enrollment sizes (10,000 or more).

Interaction Terms

There were no significant results found within the interaction terms included in model 3. From the conducted analysis performed for degree attainment and four-year transfer, results conclude that student-athletes and non-athlete students at the community college have equal odds of transferring to a four-year institution, even when considering athletic status and gender, college readiness in math, writing and reading, GPA, and an institution's geographic location.

Chapter Summary and Conclusion

The preliminary and advanced analytic methods employed in this study were intended to produce an overall picture of the similarities and differences between student-athletes and non-athlete students at the community college. In sum, the descriptive analyses provided further evidence to conclude that major differences in students' academic performance and outcomes at the community college do exist between racial/ethnic, gender, and SES groups. Additionally,

results from the descriptive analyses indicate that female students have higher rates of degree attainment and four-year transfer than men; and White students have higher rates of degree attainment and four-year transfer than Students of color. Moreover, greater percentages of low SES students were required to complete remediation in one or more of the tested content areas than students from high SES backgrounds.

In regards to similarities between students as a whole, the statistical analyses revealed that half of all students in the samples required some form of remediation at the community college. These findings further underscore the positive attributes of community colleges (i.e., providing students access to higher education regardless of past academic record), but they also illuminate how vulnerable non-college ready students are for failure or departure before reaching a successful outcome. To further illustrate this point, in all three of the conducted logistic regression models, college readiness in math and writing were significant factors in predicting the likelihood that a student would earn a degree and/or transfer to a four-year institution.

The primary purpose of this study was to address questions regarding the impact of athletic participation on student outcomes at the community college. In sum, the evidence abounds that there are significant differences between student-athletes and non-athlete students. Student-athletes earned more credits hours per semester and had higher GPAs than non-athlete students. Though, results from the conducted ANOVA models indicated that student-athletes out-perform non-athlete students, results from the logistic regressions suggest that student-athletes were still less likely to earn a degree from the community college, compared to their non-athlete peers. The final chapter of this study will further discuss the results of the conducted preliminary and advanced analyses, juxtaposed to the previous literature on this topic.

CHAPTER 5 DISCUSSION AND CONCLUSIONS

Intercollegiate athletics and community colleges serve as entryways for increased student participation in higher education and are viewed as viable avenues toward advancement of social mobility for individuals that participate (Brint, 2003; Castañeda, Katsinas, & Hardy, 2006). For students who attend the community college, social mobility is the product of degree completion and/or successful transfer to a four-year institution. However, findings for this empirical study reveal that a considerable number of students who utilize the community college and athletics as channels to access higher education, do not persist to degree completion or continue their academic studies at a four-year institution in the Florida State University System. More specifically, findings strongly suggest that Student-athletes of color are not benefiting from the opportunity to attend college and earn a degree or transfer to a four-year institution.

This comparative analysis extends the previous literature on the academic success of community college students, and brings further awareness to the academic performance and outcomes of student-athletes, more specifically. Chapter Five begins with a focus on the significant factors included in the research models which result in differences in GPA, credit hours earned, degree completion and transfer rates for student-athletes and non-athlete students. Next, I discuss differences in GPA, credit hours earned, degree completion and transfer rates, within racial, gender and SES sub-groups of athletes and non-athlete students. I will then direct the discussion to individual pre-college characteristics and institutional characteristics that result in differences in outcomes for athletes and non-athlete students.

Throughout this study, I have relied on a perspective borrowed from economics known as human capital theory to provide a framework to develop the research questions and conceptual model. In the final chapter of this study I continue to rely on this framework to interpret and

contextualize the empirical results, and to propose implications of findings for community college practitioners. As I bring this study to an end, I conclude Chapter Five with a discussion of the contribution of this body of work to the state of Florida; provide suggestions for new policies toward the improved academic success of students-athletes in Florida and nationally; and lastly, I offer suggestions for future research regarding student-athletes at the community college.

Purpose of Study Revisited

This study extends the current literature base by challenging assumptions that there are no inherent differences in GPA, credit hours earned, degree attainment or transfer rates for community college student-athletes and non-athlete students. Specifically, three main issues regarding student-athletes and non-athlete students are addressed in this study. First, this study addresses the idea that athletic participation is a major factor for increased rates of academic success for students, and for select racial, gender and SES sub-groups, more specifically. In earlier chapters of this study I proposed that no differences would be found when examining the academic performance, degree attainment or four-year transfer rates of FTFT enrolled student-athletes and non-athlete students, or within racial, gender and SES sub-groups of student-athletes and non-athlete students enrolled at the community college.

Second, this study addresses the influence of pre-college characteristics (e.g., college readiness and delayed entry to college) on students' propensity to be academically successful at the community college. The hypothesis was proposed that there are no differences in the academic performance, degree attainment, or four-year transfer rates between student-athletes and non-athlete students in the state of Florida, when comparisons are based on student's pre-college characteristics.

And lastly, this study addresses the influence of institutional characteristics on students' academic performance, degree attainment, and four-year transfer rates at the community college. I proposed that no differences would be found between student-athletes and non-athlete students when considering GPA, degree completion, and four year transfer rates for groups of students enrolled at institutions of varying FTE enrollment sizes and geographic locales.

Impact of Athletic Participation

To what extent do academic performance (GPA, credit hours earned), degree attainment, and four-year transfer rates differ between full-time first-time (FTFT) enrolled student-athletes and their peers at the community college?

Academic Performance

The results for this study dispute the hypothesis that student-athletes and non-athlete students maintain similar GPAs and successfully complete a comparable number of credits hours each semester while enrolled at the community college. Specifically, results suggest that student-athletes outperform non-athlete students in both GPA and credit hours earned while enrolled at the community college. Differences in GPA between athletes and non-athlete students held constant even for sub-group comparisons, with respect to gender, race, and SES. To illustrate, the findings indicate that female student-athletes, Student-athletes of color, and student-athletes from low SES backgrounds earn higher GPAs than non-athlete students with identical backgrounds characteristics (i.e., female students, Students of color, and students from low SES backgrounds).

The results infer that athletic participation is a positive factor for student's academic performance, measured in GPA, when considering student's background characteristics such as race, gender, and SES status. Furthermore, athletic participation seems to have the greatest impact on female students at the community college. Female student-athletes earn higher GPAs

and accumulate more credit hours each semester than their peers, regardless of race or gender. Differences found between the number of successfully completed credit hours earned by student-athletes and non-athlete students further suggests that significant differences exist in the academic performance at the community college between athletes and non-athlete students. Statistical results for this study reveal that student-athletes successfully complete four more credits hours each semester than their non-athlete peers. Even when considering subgroups comparisons (i.e., Students of color, students from high and low SES backgrounds), student-athletes still earn more credits hours per semester.

The results for the descriptive analysis are in support of previous literature that female student-athletes do better academically than their peers at the community college (Bailey, Calcagno, Jenkins, Leinbach, & Kienzl, 2006; Kanter & Lewis, 1991; Sawyer, 1993). Additionally, when examining the influence of athletic participation and race on the academic success of student-athletes at the community college, similarities can be drawn from the results for this study and examples provided in the literature. For example, Kanter and Lewis (1991) found similar positive relationships between athletic participation and increased GPA for Black and Hispanic male student-athletes. However, the results of this study do conflict with Kanter and Lewis' (1991) study, in that this study strongly suggest that student-athletes earn substantially higher GPAs and earn more credits hours than their peers, whereas Kanter and Lewis's (1991) study suggested that athletes earned slightly lower GPAs and completed fewer transfer units per year than the students in the general population.

When considering the results of this study and those from previous literature, the findings present a case that athletic participation does have an impact on student's performance at the community college. Results are conclusive that for Students of color, female students, and

students from low SES backgrounds, the investment of athletically-related financial aid by institutions does have a positive effect on student's academic performance, measured in community college GPA and credit hours successfully completed by students each semester.

However, caution must be taken when examining results for student-athletes' GPA. The utilized data set does not lend itself to differentiate the type of courses enrolled or the rigorous nature of courses for which student GPA was calculated (e.g., a physics course versus a course on Lifetime fitness and wellness). Knapp and Raney (1988) found that student-athletes GPAs at the community college are inflated due to the tendency of athletes to enroll in "easy" courses and programs of study in order to maintain GPA requirements for athletic participation. Furthermore, Lewis and Marcopulos' (1989) indicated that up to a quarter of all credits hours earned by student-athletes at the community college are earned in physical education and athletic-related courses, which can inflate student-athletes' overall GPA at the community college.

Degree Attainment and Four-Year Transfer

The following section discusses factors that lead to differences in degree attainment and four-year transfer for student-athletes, with respect to respect to race and gender. This study suggests that White student-athletes earn substantially more degrees at the community college, transfer to four-year institutions, and complete both a degree and transfer, at greater rates than Students-athletes of color. In addition to differences found between student-athletes of different racial backgrounds, results further suggest that differences exist between male and female student-athletes at the community college. Results indicate that female student-athletes surpass male student-athletes in degree completion, four-year transfer, and the combination of degree completion and four-year transfer. Similar findings have been reported in the literature to support the results for this study. These findings underscore the investment of athletically-related

financial in the development of human capital for students at the community college. Results suggest that the greatest return of institutions' investment in student's social mobility is realized through female student-athletes. Female student-athletes are more likely to leave the community college with a degree in hand or with plans to attend a four-year institution.

A combination of explanations offered in the literature may shed more light on why male and female athletes, and Students of color and White student-athletes, do not have comparable degree completion or four-year transfer rates at the community college. The literature provides that differences between groups are a result of student's level of motivation for their academic studies. Several authors have suggested that Students-athletes of color, and male student-athletes, are more athletically-motivated than academically-motivated, compared to their White and female peers, respectfully (Berson, 1996; Parmer, 1994; Schultz, 2007). Schulz (2007) found that female athletes at the community college were more academically-motivated and held higher degree aspirations than male athletes, and that White student-athletes were more academically-motivated towards these same goals than Student-athletes of color. Palmer (1994) also speculated that particular groups of students hold sports as a more profitable means toward social mobility than a degree. Palmer (1994) and other studies postulate that students from particular groups, such as males and Students of color, tend to focus more on activities that improve their prospects for professional athletic stardom than on activities that lead to degree attainment or continuation of their academic studies at a four-year institution.

While results from the descriptive analyses indicate that athletic participation is a positive influence on student GPA and the number of credit hours earned for students at the community college, the results for conducted logistic regressions indicate that athletic participation alone does not correlate to increased degree completion or transfer rates for student-athletes. Despite

the finding that student-athletes earn more credit hours each semester than their peers, student-athletes were significantly less likely to earn a degree within three and one-half years of their initial enrollment. However, non-athlete students and student-athletes have equal odds of completing four-year transfer, and completing a degree at the community college and transferring to a four-year institution.

The question then arises, if student-athletes perform better academically than their non-athletes students enrolled at the community college, why are student-athletes found to be less likely than their peers to graduate? One explanation for differences in degree completion rates could be the lack of emphasis athletic coaches and the National Junior College Athletic Association (NJCAA) place on student-athletes' degree completion at the community college. To illustrate this point further, currently the NJCAA sets eligibility standards for students' athletic participation based on full-time enrollment status and minimum semester/quarter GPA standards. Accordingly, student-athletes are more inclined to earn higher GPAs than non-athletes students, due to their desire to stay academically eligible. However, the NJCAA does not recommend or enforce graduation standards for institutions which sponsor athletic programs. Student-athletes and coaches are more inclined to focus on meeting semester enrollment and GPA requirements (Lewis and Marcopulos, 1989) than completing academic programs of study which lead to completion of a degree prior to a student leaving their respective institution.

The findings for this study which suggests student-athletes outperform their peers but are still less likely to earn a degree from the community college are disconcerting. Institutions and athletic administrators often publicize athletic programs as portals to increased college attendance for students, especially students from under-represented backgrounds (Boulard, 2008). However, results suggest that athletic programs are not supporting, or not encouraging

student-athletes to complete a degree once they enroll. An essential element of building individual human capital is the investment in education or training that lead to a credential (or output) which facilitate increased individual social mobility. Institutions are making an investment in student-athletes, but these investments are not paying off for the institutions, or for the students that are supported through the award of athletically-related financial aid at the community college.

Impact of Pre-College and Institutional Characteristics

To what extent do pre-college and institutional characteristics impact the academic performance (i.e., GPA, credit hours earned), degree attainment and four-year transfer rates of student-athletes, compared to their non-athlete peers?

Pre-College Characteristics

A considerable number of students who enter the community college each year require some form of remediation prior to enrolling in college level courses for credit (Kozeracki 2002; Oudenhoven, 2002). The large numbers of unprepared students that require remediation in math, reading and writing at the community college place a substantial strain on already scarce institutional resources (Kozeracki, 2002). Results for this study also indicate that a majority of community college student-athletes and non-athlete students, in the 2004-2005 student cohort, required remediation in at least one content area. Although the percentage of student-athletes and non-athlete students requiring remediation are very similar, the impact of student's level of college readiness did not have the same impact on both groups.

As a whole, results for the logistic regression suggest that the likelihood of degree completion and transfer decreased substantially for students not college ready in math and writing. Results do not indicate, however, that level of college readiness is a significant barrier to student-athletes' academic success at the community college. In fact, when considering results

for the descriptive analysis, a larger percentage of student-athletes that required remediation in all three content areas completed a degree compared to the percentage of non-athletes students of comparable levels of college readiness that successfully completed a degree at the community college.

An explanation for differences between the percentage rates of degree completion for non-college ready student-athletes and non-athlete students is difficult to explain using the utilized data set. However, two possible explanations can be surmised based on the previous literature and the results for this study. First, differences in degree completion rates between groups are likely a product of student-athletes' motivation to earn passing grades in their enrolled courses in order to maintain athletic eligibility (Lewis and Marcopulos, 1989), regardless if enrolled courses are for college credit or to fulfill remediation requirements. Second, differences may be contributed to student-athletes' resilience and aptitude to overcome possible boundaries, a lesson learned from their athletic training. Sparent (1988) posited that student-athletes must transfer existing skills from their athletic training to the academic environment in order to be effective and successful in their academic world. The above explanations are both feasible rationalizations for differences in degree completion rates between athletes and non-athletes students and merit future investigation through both qualitative and quantitative research methods.

Institutional Characteristics

While the results for this study indicate that institutional characteristic do play a role in the success of students at the community college, institutional characteristics were not found to impact academic outcomes for student-athletes and non-athlete students in the same manner. Results from the logistic regressions reveal that institutional enrollment size is a barrier for non-athlete students, but enrollment size does not affect the likelihood of degree completion for

student-athletes. Non-athlete students who attend institutions in the state of Florida with FTE enrollment sizes between 5,000 and 9,999 are at greatest risk of not earning a degree, compared to their peers at institution in the state with FTE enrollment sizes at or above 10,000 FTEs. Conversely, results reveal that student-athletes at rural institutions throughout the state are at greatest risk of not completing a degree while attending a community college, compared to their peers at suburban institutions. These findings juxtaposed to the literature deserve further attention.

Previous research has suggested that rural institutions are most welcoming to athletic programs and to student-athletes, and that nearly fifty percent of all community college student-athletes attend a rural institution (Castaneda, Katsinas, & Hardy, 2006). According to Castaneda, Katsinas & Hardy (2006), rural institutions account for nearly three-quarters all athletic scholarships that are awarded to student-athletes at community colleges within the U.S. Considering results from this study, which suggest student-athletes at rural institutions are most likely not to complete a degree, it may come to reason that the investments in students via athletically-related financial aid at rural institutions is not a wise investment on the part of institutions, unless support system are in place at the institution to support student-athletes to succeed academically.

Contributions of this Study to the State of Florida

This study makes a contribution to the state of Florida by providing a report of student-athletes' performance at community colleges within the state of Florida. Applying a longitudinal methodology highlight the importance of tracking the academically-related behaviors of student-athletes and the exploration of factors which affect student-athletes' likelihood to leave the community college prior earning a degree. Additionally, this longitudinal model provides a benchmark for future comparative studies of student-athletes and non-athletes at the community

college and the continued examination of student-athletes' academic behaviors at the community college. In the same vein, this study makes a contribution to the study of higher education by providing a model, the support, and impetus for continued monitoring of the academic successes, failures, and outcomes of student-athletes at community colleges in the state of Florida.

This study further seeks to advance awareness of the impact of student participation in athletics and the influence of individual and institutional characteristics on the academic success of student-athletes. Athletic programs at community colleges have the capacity to make a great impact on institutions and student-athletes alike. This study highlights the barriers and vast opportunities sports at community colleges provide in hopes that institutions and the state will use such data to optimize the positive impact of sports, to benefit both the success of institutions and student-athletes.

And lastly, this study provides state legislators and institutions a "receipt" detailing the return of their financial investment in student-athletes' academic studies at the community college. This study not only provides indication that athletically-related aid benefits students at the community college, but also suggests areas in which more human and financial resources should be directed in the future to obtain the greatest return on the investments made by the state and institutions, toward increased student success.

Implications for practice

Many debates have transpired throughout higher education and within political circles regarding degree completion and four-year transfer rates for students who begin their academic studies at a community college. A number of these debates have centered on the paradoxical expectations placed on community colleges to maintain open access while also producing large quantities of academically prepared students (Bailey & Morest, 2006; Oudenhoven, 2002; Roueche & Baker, 1987). From these debates and conversations, and as evidenced in this

empirical study, it is unequivocally clear that aims for increased student participation in higher education via community colleges and athletics must be accompanied by zealous attempts to support students academically once they enroll (Ashburn, 2007; Dougherty & Kienzl, 2006). Based on results from this study, I provide four recommendations for ways in which institutions and practitioner at the community college can better support the academic pursuits of student-athletes at their institution.

First, create institutional cultures that encourage and challenge student-athletes to enroll in college level courses which lead to a degree or professional certificate. The development of such a culture devoted to student-athletes' degree completion must begin with the institutional administrators, but also include the support and endorsement of coaches, athletic support staff members, and faculty members. Through this joint initiative, student athletes will have support through a network of community college offices focused on helping them achieve these outcomes (i.e. degree, certificate, or transfer).

Second, encourage athletic coaches to recruit prospective student-athletes that are able to handle the academic and athletic responsibilities associated with being a college athlete. This includes, but is not limited to, considering prospective students level of college readiness in math, reading, and writing prior to making an offer to compete athletically or awarding athletically-related financial aid. Though, athletic programs are a great recruiting tool for many prospective students and athletes, athletic participation and the associated academic responsibilities may be a too much to manage for students with below average academic records. Accordingly, institutions and administrators must assume the responsibility of making sure students leave their institutions with the academic skills and/or work skills to enter a four-year institution or the workforce.

Third, ensure focus and care is given to provide the necessary support and attention student-athletes from low SES backgrounds need to be successful. The opportunity to participate in college athletics and the award of athletically-related financial aid are both enticing for students from low SES backgrounds to access higher education. However, students from low SES backgrounds are more likely to struggle academically and leave an institution prior to completing a degree. The additional personal responsibilities associated with athletic participation have the propensity to severely hinder the probability low SES students will be successful at the community college. Accordingly, it is important for institutions to put in place ongoing, intentional efforts to support students beyond providing financial incentives for attending the community college and participating in intercollegiate athletics.

Fourth, find additional ways to incorporate faculty members in the implementation of programs and services to assist student-athletes at the community college. Faculty members work with students daily, and they may have a broader understanding of the academic and social barriers confronting student-athletes at the community college. Developing programs where faculty members can serve as ambassadors to the athletic program provide additional avenues for student-athletes to obtain valuable information about future academic and professional planning, which may not be available through services provided by athletic programs.

State and National Policy Recommendations

Over four decades ago, the National Collegiate Athletic Association (NCAA) instituted a set of policies aimed at enhancing the quality of students recruited by institutions to participate in varsity athletics at NCAA affiliated institutions (Heck and Takahashi, 2006). Since 1965, the NCAA has steadily increased minimum eligibility requirements for prospective student athletes to participate in athletics at Division I and Division II institutions. The lineage of NCAA policies began with the 1.6 rule (1965), which required prospective student-athletes to have high school

academic records that are able to “predict a minimum college grade point average of 1.6 on a 4.0 scale” (NCAA, n.d.), to the most recent legislation, Proposition 26 (2003), which increased the number of required core courses a high school student must complete that was originally put forth in Proposition 16 (1992). Minimum eligibility standards for athletic participation are intended to increase students’ degree completion, and often, exceed the minimum requirements of institutions’ admissions offices (DeBrock, Hendricks, and Koenker 1996; Heck and Takahashi 2006). However, the national athletic governing boards for junior/community college athletics have yet to institute such “safe guards” for student participation.

Minimum eligibility requirements serve as the preliminary screening of students to protect both the student and institution from future academic failures. In other words, only students that are qualified to handle their academic studies and athletic participation are granted clearance to participate in athletics at the college level, even at open access community colleges. Unlike four-year institutional governing bodies, boards that govern athletics at the community college have not gone to such lengths to protect the prospective student-athlete or the institution which sponsor athletic teams. Instituting minimum eligibility requirements also protect the investment made by institutions and athletic programs. If financial resources are being set aside for a student to attend an institution and participate in athletics, care must be given to the type and caliber of students that benefit from these resources. If providing increased access to higher education is the goal of athletic programs and institutions so should consideration of mechanism to ensure student-athletes receive a degree and/or prepared for academic studies at four-year institutions. Currently the onus is on community colleges in the state to set the standards for policies regarding the academic standards for student-athletes. The time is quickly approaching when important decisions regarding community college student-athletes’ future will be made by four-

year institutions and governing bodies, which may not have the best interest of the community college or community college student-athlete in mind. Accordingly, I propose possible institutional and state policies to enhance the probability of success for both student-athletes and.

First, consideration should be given to the creation of minimum academic requirements (e.g., high school grade point average, entrance exam score) for participation in athletics at public community college state-wide. For students that are interested in participating in athletic programs at the community college minimum requirements would have to be met prior to the award of athletically-related financial aid, and prior to being permitted to participate in scheduled practices or athletic competitions. The establishment of minimum athletic requirements may limit the number of students that are able to participate in athletics, but such requirements would also reinforce the importance of academics to prospective students, parents/guardian, and coaches.

Second, institutions with athletic programs should consider working directly with academic support services to create degree programs plans for all student-athletes, based on students' desired academic and professional goals. Providing guidance to student-athletes in regards to degree requirements and transfer requirement will help to decrease student enrollment in non-transfer courses. Most importantly, academic advising and course registration should not be conducted by athletic coaches or athletic staff members not familiar with degree requirements at the respective institution. Providing appropriate and thoughtful academic advising will also encourage and facilitate timely degree completion. Support staff that work directly with student-athletes should be well-versed in minimum eligibility requirements for transfer and athletic participation at four-year institutions in the state, as well as transfer guidelines for all four-year athletic conferences represented in the state.

Third, the state of Florida should consider an annual census of three year degree completion and transfer rates for student-athletes at community colleges. A formula should be developed with consideration given to the “typical” academic behaviors and frequent movement between institutions often witnessed in community college student populations. The establishment of three year guidelines also provide institutional standards and expectations that financially supported students should put forth deliberate efforts to earn a degree while enrolled in classes and participating in athletics. Three-year degree completion and transfer rates also provide institutions with standards in which to measure the success of athletic programs. Such standards are essential to evaluating programs annually, and if necessary, evaluating programs to eliminate during times of limited or depleting financial resources. In future years, consideration may also be given to penalizing athletic programs (e.g., decrease in number of athletic scholarships available, decrease number of competitions for a sport or all sports) that annually struggle to graduate or transfer their student-athletes.

Suggestions for Future Research

The hope is that this present inquiry will inspire and encourage future empirical research on the experiences of student-athletes at the community college, throughout Florida and nationally. There are endless possibilities for future research focused on student-athletes at the community college. Based on the findings from this study, I provide areas where future research is necessary to expand the current literature on the impact of athletics and athletic participation at the community college and the academic performance and outcomes of community college student-athletes.

Additional quantitative and qualitative inquiry is needed to explore the impact of college readiness on the degree completion and transfer rates for student-athletes at the community college. Gaining a greater understanding of how college readiness impacts student-athletes’

degree completion is essential to the academic success of athletes, as well as the creation and implementation of programs and services to assist non-athlete students that are not college ready to earn a degree or continue their education at a four-year institution.

Next, increased research focused on the impact of student-athletes individual characteristics, such as learning disabilities, on degree completion and four-year. Many athletic programs at four-year institutions have instituted programs specifically designed to test students for learning disabilities and to support student-athletes that are found to have such disabilities. Continued research on the extent to which students are inhibited by such learning disabilities is essential to developing a holistic approach to supporting student-athletes at the community college.

Finally, I suggest future quantitative research on the influence of athletically-related financial aid and other financial aid and loan packages on student-athletes success at the community college. Many student-athletes, as seen in this study, receive other forms of aid in addition to athletically-related aid (e.g., Pell grants, merit based financial aid). A greater understanding of the ultimate impact of these programs on students success versus non-scholarship student-athletes' and students that work more than 30 hours per week, will increase our awareness of the impact of athletic participation and the award of all types of financial aid.

Fourth, continued research on the persistence of community college student-athletes' to bachelor and master's degree attainment is essential to understanding the foundation and importance initial access to higher education via athletics play in the subsequent enrollment and success of former community college student-athletes. If community colleges and intercollegiate athletics are truly viable paths toward social mobility, understanding the specific ways, and to

what extent, athletics and the community college benefit student's progression in higher education is paramount.

Lastly, additional research is necessary to explore the role faculty members play in recruiting, mentoring, and advising student-athletes and impact of faculty members on the academic success of student-athletes at the community college. Not much information is available about the multifaceted roles faculty member hold at community college or the impact they have on student-athletes and athletic departments.

Closing Words

If we examine the turbulent situations many four-year athletic programs have found themselves in over the past 20 years (e.g., cheating, falsifying transcripts, improper gifts to athletes, etc.), a majority of these problems are the product of institution's increased focus on winning and developing successful athletic programs, rather than staying focused on the fundamental establishment of college sport (Duderstadt, 2002; Reapple, et al., 1982). Athletics, as an extension of the institutional mission, provide a mechanism in which institutions can further support the personal and athletic goals of its student-athlete population. This balanced approach of providing both students and athletic programs support is manifested through institutions' evenly balanced financial commitment and implementation of policies geared toward athletic programs growth, and the academic success of those that participate.

This study was intended to illuminate the importance of a continued focus on the student-athlete, and not on the sport or athletic success of institution's athletic programs or the student-athlete. For a majority of student-athletes at the community college, athletics serve as a foundation on which increased human capital can prevail. When the final pitch is thrown, and the final whistle blows, the student-athletes that are truly viewed as successful are those that have a degree or the training to survive and excel in the game of life.

APPENDIX A
 NATIONAL COLLEGIATE ATHLETIC ASSOCIATION (NCAA) ELIGIBILITY SLIDING
 SCALE FOR GPA AND ENTRANCE TEST SCORES

Table A-1. NCAA Division I core GPA and test score sliding scale

Core GPA	SAT	ACT	Core GPA	SAT	ACT
3.550 & above	400	37	2.750	720	59
3.525	410	38	2.725	730	59
3.500	420	39	2.700	730	60
3.475	430	40	2.675	740-750	61
3.450	440	41	2.650	760	62
3.425	450	41	2.625	770	63
3.400	460	42	2.600	780	64
3.375	470	42	2.575	790	65
3.350	480	43	2.550	800	66
3.325	490	44	2.525	810	67
3.300	500	44	2.500	820	68
3.275	510	45	2.475	830	69
3.250	520	46	2.450	840-850	70
3.225	530	46	2.425	860	70
3.200	540	47	2.400	860	71
3.175	550	47	2.375	870	72
3.150	560	48	2.350	880	73
3.125	570	49	2.325	890	74
3.100	580	49	2.300	900	75
3.075	590	50	2.275	910	76
3.050	600	50	2.250	920	77
3.025	610	51	2.225	930	78
3.000	620	52	2.200	940	79
2.975	630	52	2.175	950	80
2.950	640	53	2.150	960	80
2.925	650	53	2.125	960	81
2.900	660	54	2.100	970	82
2.875	670	55	2.075	980	83
2.850	680	56	2.050	990	84
2.825	690	56	2.025	1000	85
2.800	700	57	2.000	1010	86
2.775	710	58			

Source: National Collegiate Athletic Association 2008-2009 Guide for the college-bound student-athlete (2008).

APPENDIX B
CALCULATIONS OF ODDS-RATIOS FOR CONTINUOUS VARIABLES IN GENERAL
LINEAR MODELS (GLM)

Formula for calculating odds-ratios for continuous variables: $\frac{\exp\{\beta_1(\chi+1)\}}{\exp(\beta_1\chi)} = \exp\{\beta_1(c)\}$

Model 1: Degree attainment

$$\text{One unit change in GPA (1.30 to 2.30)} = \frac{\exp\{0.984(1.30+1.00)\}}{\exp(0.984(1.30))} = \frac{9.6138}{3.5937} = 2.42$$

$$\text{One unit change in GPA (2.30 to 3.30)} = \frac{\exp\{0.984(2.30+1.00)\}}{\exp(0.984(2.30))} = \frac{3.2472}{2.2632} = 6.49$$

$$\text{One unit change in credit hours earned (10 to 11)} = \frac{\exp\{.249(10+1.00)\}}{\exp(.249(10))} = \frac{2.739}{2.49} = 3.410$$

$$\text{One unit change in credit hours earned (11 to 12)} = \frac{\exp\{.249(11+1.00)\}}{\exp(.249(11))} = \frac{2.988}{2.739} = 4.374$$

Model 2: Four-year transfer

$$\text{One unit change in GPA (2.30 to 3.30)} = \frac{\exp\{1.251(2.30+1.00)\}}{\exp(1.251(2.30))} = \frac{4.1283}{2.8898} = 8.1026$$

$$\text{One unit change in credit hours earned (10 to 11)} = \frac{\exp\{.232(10+1.00)\}}{\exp(.232(10))} = \frac{2.552}{2.889} = 2.657$$

Model 3: Degree attainment and four-year transfer

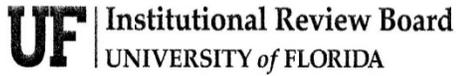
$$\text{One unit change in GPA (1.30 to 2.30)} = \frac{\exp\{1.810(1.30+1.00)\}}{\exp(1.810(1.30))} = \frac{4.163}{2.353} = 1.161$$

$$\text{One unit change in GPA (2.30 to 3.30)} = \frac{\exp\{1.810(2.30+1.00)\}}{\exp(1.810(2.30))} = \frac{5.973}{4.163} = 7.097$$

$$\text{One unit change in credit hours earned (10 to 11)} = \frac{\exp\{.269(10+1.00)\}}{\exp(.269(10))} = \frac{2.959}{2.69} = 4.54$$

$$\text{One unit change in credit hours earned (11 to 12)} = \frac{\exp\{.269(11+1.00)\}}{\exp(.269(11))} = \frac{3.228}{2.959} = 5.95$$

APPENDIX C
INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL LETTER



PO Box 112250
Gainesville, FL 32611-2250
352-392-0433 (Phone)
352-392-9234 (Fax)
irb2@ufl.edu

DATE: August 11, 2008

TO: David Horton, Jr.
53010301 Lakeside Complex
Gainesville, FL 32612

FROM: Ira S. Fischler, PhD; Chair *ISF*
University of Florida
Institutional Review Board

SUBJECT: **Revision of Protocol #2006-U-0719**
Persistence and Academic Success of Students Receiving Athletically-Related
Aid from the Community College: An Analysis of the State of Florida

SPONSOR: Noe

The request to revise the above referenced protocol has been reviewed and approved. The Board must review any further revisions to this protocol, including the need to increase the number of participants authorized prior to implementation.

IF:dl

Amended title and updated funding sources

APPENDIX D
ASSOCIATION FOR INSTITUTIONAL RESEARCH (AIR) DISSERTATION FELLOWSHIP
AWARD LETTER



**Association for
Institutional Research**

Enhancing Knowledge. Expanding Networks.
Professional Development, Information Resources & Networking

March 13, 2008

David Horton
216 NW 3rd Ave, Apt. A
Gainesville, FL

Executive Director
Randy L. Swing

2007-08 Board of Directors

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Policy Committee Chair
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Alan J. Sturtz
Goodwin College

Professional Development
Services Committee Chair
Karen L. Webber
The University of Georgia

Publications Committee Chair
Gary R. Pike
Indiana University Purdue
University Indianapolis

Dear David Horton,

Congratulations! I am happy to inform you that your Dissertation Fellowship proposal, *Persistence and Academic Success of Students Receiving Athletically-Related Aid from the Community College* was selected for funding through the Association for Institutional Research-National Center for Education Statistics-National Science Foundation grant program, *Improving Institutional Research in Postsecondary Education Institutions*.

The amount funded is \$19,999 for the period June 1, 2008 through May 31, 2009. In addition, you will receive a one-year membership with AIR beginning July 1, 2008. Please complete the enclosed membership form and return it to the AIR office.

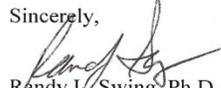
Program time will be set aside for you at the AIR Forum in Atlanta, GA, May 30 through June 3, 2009, so that you may present the findings of your project.

A copy of this award letter and supporting financial information was sent to the institutional representative identified in your application.

As a result of the discussion regarding your proposal, the grant review panel had some specific comments they wished to share with you. These comments are enclosed. Please consider the comments as you begin working on your project.

Thank you for participating in the AIR grant program. Please contact Sharon Lynn at (850) 385-4155 x105 or slynn@airweb2.org with any administrative questions concerning your project. We look forward to a productive year.

Sincerely,


Randy L. Swing, Ph.D.
Executive Director

Enclosure

Cc: Linda Hagedorn, University of Florida - College of Education
Brian Prindle, University of Florida - Division of Sponsored Research

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BIOGRAPHICAL SKETCH

David Horton Jr. was born to David and Ollie Fay Horton in 1977, in Austin, Texas. The youngest of four children, David grew up in Austin and graduated from A. N. McCallum High School in 1996. Upon completion of his high school diploma, he attended and participated on the varsity baseball team at Panola College in Carthage, Texas. After earning his associate's degree from Panola College in 1997, David moved to Dallas, Texas to continue his academic studies at Dallas Baptist University (DBU). At DBU, he continued to participate in intercollegiate athletics, and eventually earned a Bachelor of Science (B.S.) degree and a Master of Liberal Arts (M.L.A) degree in History in 2001 and 2003, respectively.

While working on his master's degree, David was employed full-time as the Coordinator for Graduate Admission at DBU. Upon completion of his master's degree in August of 2003, he began his college teaching career at DBU as an adjunct History professor for the College of Humanities and Social Sciences. During his doctoral studies at the University of Florida, David continued to teach courses in American History during his winter breaks.

In 2004, David resigned from his position as the Coordinator of Graduate Admission and moved to Gainesville, Florida, to begin his academic studies at the University of Florida. David held a number of part-time positions at UF during his academic studies. He began working as the Recruitment Coordinator for the Office of Recruitment, Retention and Multicultural Affairs in the College of Education. After a year in this position, he transitioned to the Department of Housing and Residence Education, where he worked for two and one-half years as a Graduate Hall Director, and intermittently as a Interim Residence Hall Director, before beginning his work as a Research Assistant, for Dr. Linda Serra Hagedorn and Luis Ponjuan, in the Department of Educational Administration and Policy in the College of Education.

Over his academic studies at the University of Florida, David has been awarded a number of awards and acknowledgements from the College of Education and national organizations. During the 2006-2007 and 2007-2008 academic years, he was nominated as a Barbara L. Jackson Scholar. In this position, he served as the College of Education representative at the University Council for Educational Administrators (UCEA) annual conference. In the final year of his academic studies, David was awarded the prestigious Association for Institutional Research (AIR) dissertation fellowship.